Informatix Inc.

MicroGDS

MicroGDS 10.0

Advanced Training Course

Introducing the MicroGDS Advanced training course

This course is intended for users who are familiar with the basics of MicroGDS and now wish to learn about some of the more advanced features. It is assumed that you have completed the MicroGDS Foundation Course and that you are familiar with the general layout and concepts of the system.

During the course, you will experience how easy it is to work with large sets of graphical data, by creating and building up a multi-user project. For each task, we show the most common way to accomplish it. The course will guide you through each topic, with step-by-step instructions, to enable you to complete each section.

Before you begin

Ensure that MicroGDS version 10.0 Plus or Pro, has been installed on your computer.

Copy the Advanced training data folder to your computer's hard disk.

MicroGDS documentation

You will need a copy of the Using MicroGDS version 9.0 and Introducing MicroGDS version 10.0.

Important

One part of this course shows you how easy it is to change the MicroGDS user interface. It is recommended that you first check with other users before doing so, for example, if the computer on which you are running the course is not your usual workplace machine.

If you wish to revert to the settings that were in place at the start of this course, ensure that you make a note of any configuration file locations that you are asked to change and reassign the paths appropriately.

1. Planning and setting up project environments

Working with large sets of graphical data from different sources and disciplines could be a daunting task to manage. For example, in a large multi-disciplinary project, architects, engineers, landscape designers, service engineers, interior designers and other professions, may need to access data simultaneously. MicroGDS provides the multi-user project facility for this reason.

Multi-user projects enable you to handle the data in a structured manner, keeping track of all the relevant drawing files that you need when working with large projects of this nature.

In this section you will learn how to create a MicroGDS project database to manage the data for a large project. You will then create two MicroGDS project workspaces through which you access the drawings within the project.

1.1   Creating a project database

1   Start MicroGDS and click New on the File menu. The Create a New File dialog box is displayed.

2   Select the Project database option and click Next. The Create a New Project Database dialog box is displayed. You can select a template, a database type, and enter a short description of the project.
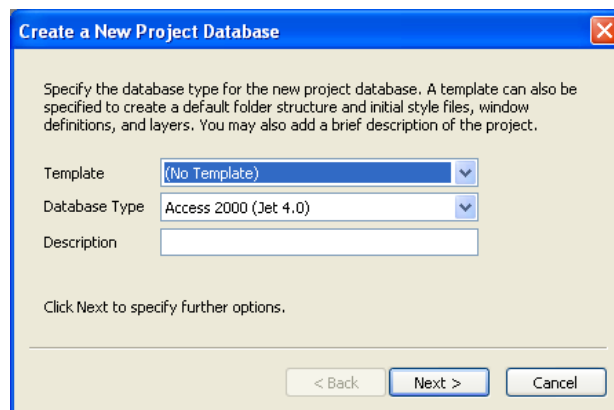
3   At this point, you are not selecting a Template, and you will leave the Database Type at its default. Type a short description for the project database in the Description box. In this case type **Health and Fitness Club.**

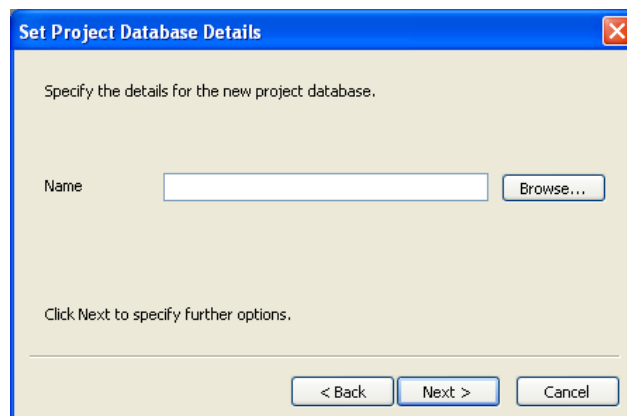**4**   Click Next. The Set Project Database Details dialog box is displayed.

5   To enter a project database name, click Browse and locate your C drive (or the drive on which you wish to hold the database). Click the Create New Folder button and rename the folder to **Flints Health and Fitness Club:**

6   You will use this folder to save your work throughout the course. Double-click the folder to open it.

7   In the File name box, type the name of your project database **Flints** and click Open. The Set Project Database Details dialog box is again displayed, this time with the folder path and database name.

8   Click Next.

Defining database aliases

MicroGDS displays the Define Database Aliases dialog box. For example:
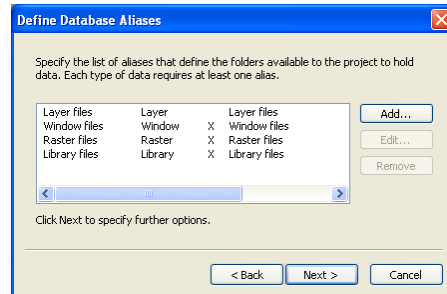
For more information, see Using aliases in Help.

A layer file contains graphical data, including objects, attribute data, and text.

A window definition provides a view onto the graphical data stored on the layers.

Aliases are the names you associate with the folders available to the project. There are several alias types:

- layer aliases specify the folders for new layers
- window aliases specify the folders for new window definitions
- raster aliases specify the folders for accessing raster images
- library aliases specify the folders for accessing library files
- reference aliases specify the folders for accessing MicroGDS documents whose windows can be used as photos.
  Note that reference aliases are optional.
- Renderer aliases specify the locations of files used by the renderer; rendering is not covered in this course.

The default alias name for each alias type is shown on the left of the dialog box. The default folder name for each alias, which MicroGDS will automatically create, is shown on the right of the dialog box. Notice that the folder names are created immediately below the project database folder. Therefore only the relative paths of the alias locations are shown. This means that if the project is moved to another drive, the aliases will still be relative to the project and will not have to be reassigned. Note that reference and renderer aliases are optional and therefore do not have default alias names.

If you accept these details, MicroGDS creates subfolders in the project database with the names shown, and maps those locations to the default alias names.

You are not going to accept all the default aliases offered. Instead you are going to define two separate aliases for layers and window definitions, one for the Club House and one for the Site. You are also going to define an additional alias for layers called Import. This will be used to import layer files from a DXF drawing.

1 Select the 'Layer files' alias and click Edit. The Alias Editor is displayed:
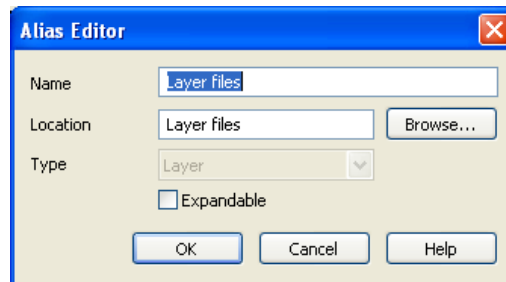
2 Change the Name to read **Club House Layer files**.

You are going to store all layer files relating to the Club House in a new folder 'Club House\Layer files'.

3 Edit the Location by adding at the start of the path **Club House**.

Your Alias Editor should now look like this:
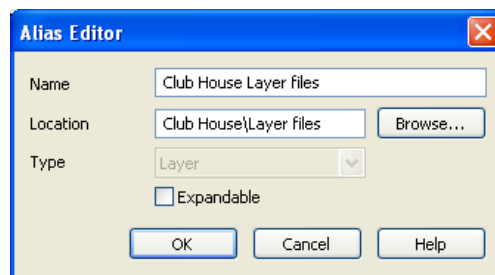
4 Click OK. You are returned to the Define Database Aliases dialog box.

You are going to store all window files relating to the Club House in a new folder 'Club House\Window Files'.

5 Now click the 'Window files' alias and click Edit.

6 Edit the Name in the Alias Editor to read **Club House Window files**.

7 Edit the Location to read **Club House\Window files**.

Selecting the expandable check box allows users of the workspace to expand an alias name to show any subfolders.

8 Ensure that the Expandable check box is selected. Your Alias Editor should now look like this:
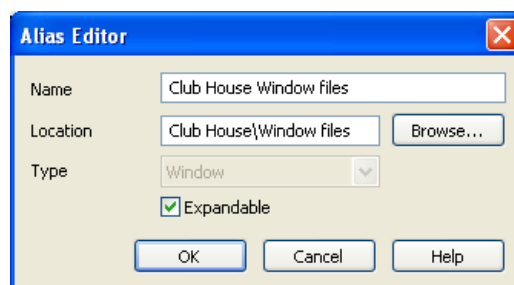
9 Click OK. You are returned to the Define Database Aliases dialog box.

A raster file is in one of the
following formats:
BMP, DIB, JPG, (or JPEG), TIF,
(or TIFF), PNG or EPX. For more
information, see Help.

The raster and library files refer to the whole project, so these will
remain in their locations above the Club House and Site folders.

The aliases should be as shown in the Define Database Aliases
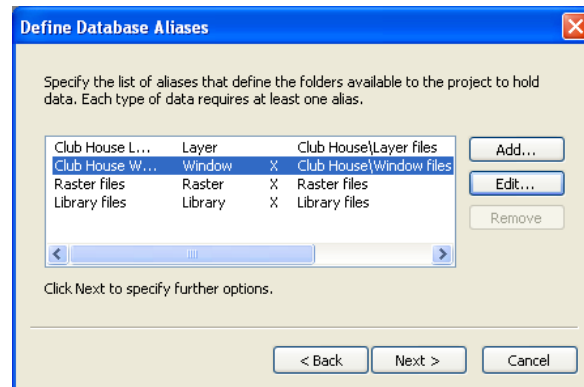dialog box below. If you have made any mistakes, use the Edit button
to correct them.

You are now going to define two new aliases for folder locations that
will contain the data relating to the car park and surrounding area, for
the Site project workspace.

10 On the Define Database Aliases dialog box, click Add to display the
Alias Editor.

11 Make sure the alias Type is set to Layer.

12 In the Name box, type **Site Layer files**. In the Location box, type
Site\Layer files, and then click OK.

13 Click Add to redisplay the Alias Editor.

14 Change the alias Type to Window and ensure that the Expandable
check box is selected.

15 In the Name box, type **Site Window files**. In the Location box, type
Site\Window files, and then click OK.

You will now create the final layer alias within the Site folder to hold
the imported layers.

16 Repeat steps 10 to 12, typing in the Name box **Import Layer files**
and typing in the Location box **Site\Layer files\Import**.

Note that the X in the Define
Database Aliases dialog box
indicates that the alias folder
is expandable.

You have now finished defining your aliases. Your Define Database
Aliases dialog box should now contain the following:

Club House Layer files	Layer		Club House\Layer files
Club House Window files	Window	X	Club House\Window files
Raster files	Raster	X	Raster files
Library files	Library	X	Library files
Site Layer files	Layer		Site\Layer files
Site Window files	Window	X	Site\Window files
Import Layer files	Layer		Site\Layer files\Import

If your dialog box is different from the above, click Edit and make the
necessary amendments.

17   Click Next.

18   Click 'Yes' at the prompt 'The folder Club House\Layer files does not exist. Do you wish to create it and any other alias folders?'

MicroGDS has created the appropriate folders for you. You can see your file structure in Windows Explorer. **Do not** close down MicroGDS at this stage as you have not finished creating your project.

19   To see your file structure, start Windows Explorer and go to the location of your Flints Health and Fitness Club folder. Open all the subfolders. Your project structure should look like this (you may need to refresh your screen – press F5):
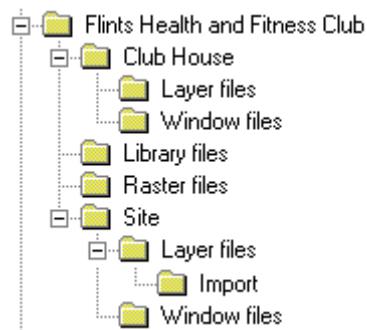
20   Close Windows Explorer and return to your MicroGDS session.
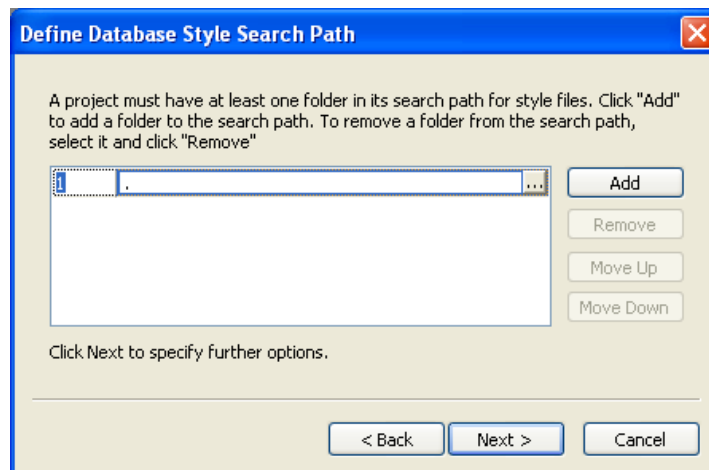
The Define Database Style Search Path dialog box is displayed:

Defining the database style search path

MicroGDS uses the style search path to read and store style files such as linestyles and character styles (charstyles). A project must have at least one location in its search path for style files. You can change the default location, and add and remove folders from the style search path as applicable.

Your company may have company standard styles which will be held in a separate location. They will not be editable locally.

The first location that you specify defines the folder in which styles are updated and saved as you work. The style files in this location are known as local style files and contain the local styles for the project.
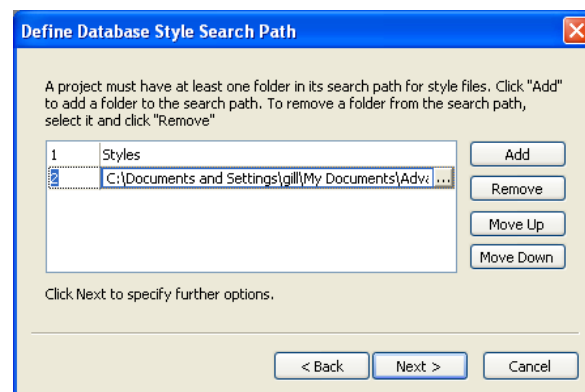
You can reorder the locations in the style search path using the Move Up and Move Down buttons.

1   To define the folder for your local style files, click in the first location, labelled 1, remove the dot and type **Styles.**

You are now going to set up a second location in the style search path to enable you to use styles from other style files. These styles would normally be your company's standard styles. However, for the purpose of this training course you will use some pre-created style files in the training data folder.
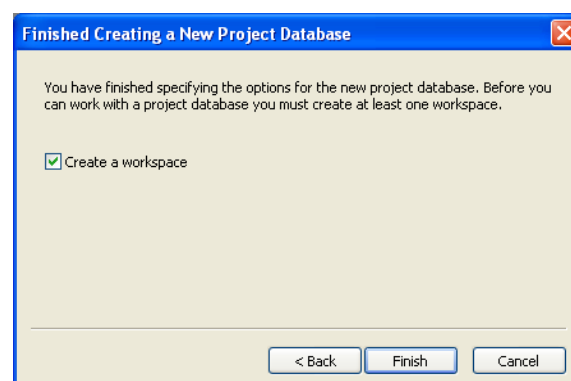
2   On the Define Database Style Search Path dialog box, click Add. Select location 2 and click the browse button. Go to the Advanced training data folder, select the Company Styles folder, and then click OK.

Your style search path should now show:

Define Database Style Search Path

A project must have at least one folder in its search path for style files. Click "Add" to add a folder to the search path. To remove a folder from the search path, select it and click "Remove"

1	Styles
2	C:\Documents and Settings\gill\My Documents\Adva …

Add
Remove
Move Up
Move Down

Click Next to specify further options.

< Back   Next >   Cancel

3   Click Next, and click 'Yes' at the prompt 'The folder Styles does not exist. Do you wish to create it?'. MicroGDS creates a new folder called Styles under the Flints Health and Fitness Club folder.

The Finished Creating a New Project Database dialog box is displayed:

Finished Creating a New Project Database

You have finished specifying the options for the new project database. Before you can work with a project database you must create at least one workspace.

☑ Create a workspace

< Back   Finish   Cancel

If you do not select the Create a workspace check box, you can create a workspace later by selecting File New and selecting the Project workspace option.

You are now ready to create the first of the two project workspaces.

4   Ensure that the 'Create a workspace' check box is selected, and then click Finish.

The Create a New Project Workspace dialog box is displayed.

1.2   Creating a project workspace

A project database can have any number of workspaces so that access to the data can be allocated to different users or disciplines. You are going to create two project workspaces:

- Flints Site.cpj
- Club House.cpj

A workspace contains information such as the project database to be used, the layers that are editable and the default locations in which to save new files. It is also the way that you access the data.

Project databases can be saved as project templates on which new projects can then be based. For details, see the guide Using MicroGDS.

As you had selected the Create a workspace check box, the Create a New Project Workspace dialog box is displayed. As you have just created a project database, the name of the project workspace and the database are entered automatically in the appropriate boxes, for example:
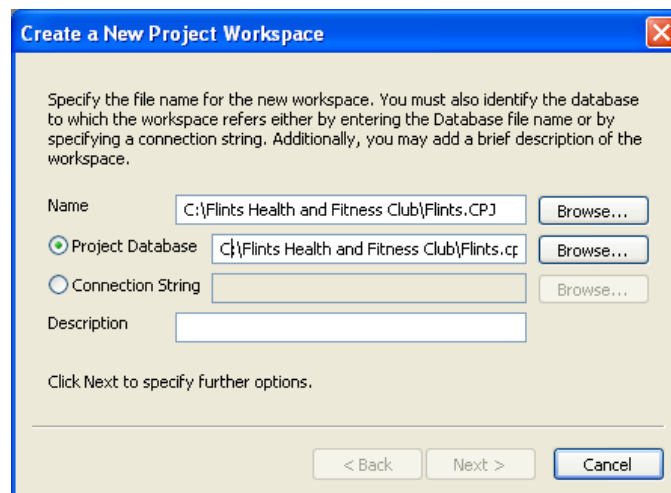
You will first create the Site workspace.

1   Edit the Name box to add 'Site' to the CPJ name. The box should now show ***drive*:\Flints Health and Fitness Club\Flints Site.CPJ**

Do not change the project database name as this is the database you want the Flints Site workspace to reference. Leave the Connection String unchecked. Checking this enables you to identify existing data to connect to.

2   In the Description box, type Site workspace for Flints Health and Fitness Club

Project databases and workspaces can be created and managed using the Project Administrator utility. Refer to the Project Administrator Help.
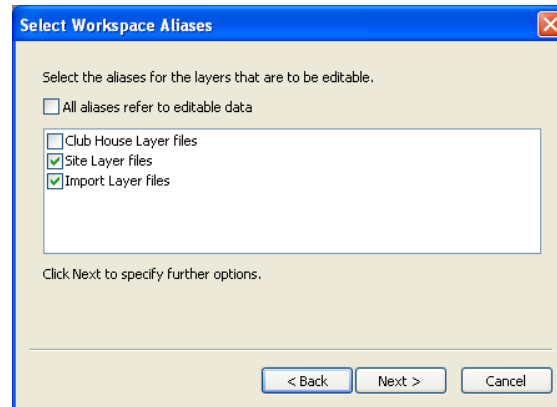
3   Click Next.

MicroGDS displays the Select Workspace Aliases dialog box. This enables you to select the layer aliases for the layers that are to be editable by users of the Site workspace.

Initially, the 'All aliases refer to editable data' check box is selected. This means that all the layers referenced by the following aliases are editable by all users. You can restrict users from editing specific
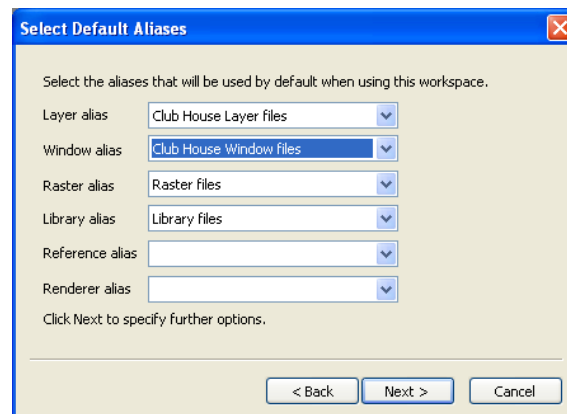
layers, by clearing this check box, and then selecting the aliases that refer to the layer file locations to be made editable.

4   Clear the 'All aliases refer to editable data' check box and select the 'Site Layer files' and 'Import Layer files' check boxes.
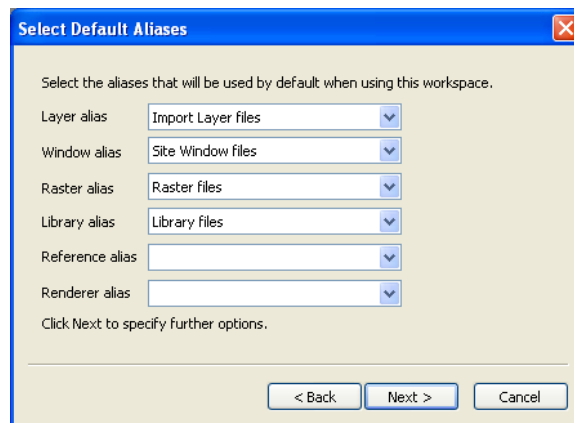
5   Click Next.

The Select Default Aliases dialog box is displayed:

Default aliases are stored in each workspace that refers to the database. For example, a Site workspace would have default aliases to store site data. This ensures that new files are saved automatically in the appropriate locations.

Once the project has been created, the only way to permanently change the default aliases in a workspace is by using the Project Administrator utility. Refer to the Project Administrator Help for details.
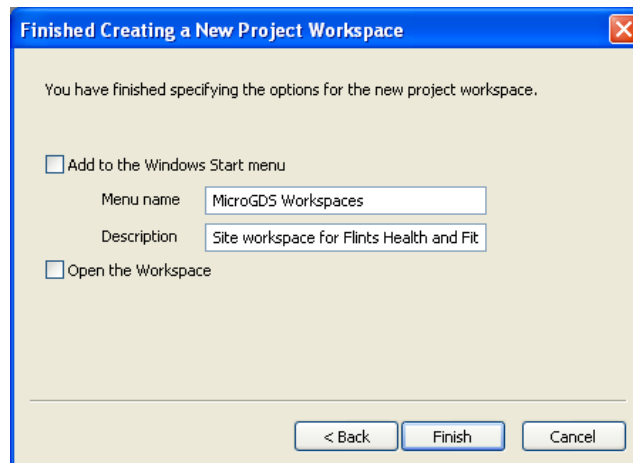
6   As one of your first tasks will be to import a DXF file, select the Import Layer files as the default layer alias and the Site Window files, as the default window alias.

7   Click Next.

The Finished Creating a New Project Workspace dialog box is displayed:

If you select the Add to the Windows Start menu check box, the Flints Site CPJ will be added to your Start menu and you will be able to click on it to open it without first starting MicroGDS.

8   Select the Open the Workspace check box and then click Finish.

MicroGDS creates Flints Site.CPJ (the workspace) and adds it to the Document Organizer:
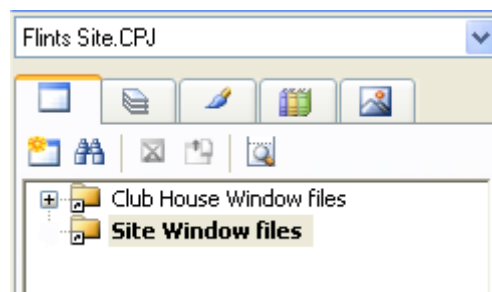
Note that the default window definition alias is bold and highlighted.

MicroGDS also adds a placeholder window to the MicroGDS window to indicate that the workspace is open, but no window definitions are currently open:

For the time being you will leave Flints Site.CPJ and, as a short exercise, create the second workspace for the Club House.

Exercise 1: Creating the Club House workspace

Create a second workspace for data relating to Flints Club House. The Club House workspace will refer to Flints project database. Follow the wizard from the File New menu. A brief description of the steps has been included below to help you.

1   On the Create a New File dialog box, select the Project workspace option.

2   Enter the name for the new workspace.
Tip: Browse to *drive*:\Flints Health and Fitness Club and double-click the folder to open it. In the File name box, type **Flints Club House**.

3   Browse for and select Flints.cpd as the database. Leave Connection String unchecked.

4   In the Description box, type Club House workspace for Flints Health and Fitness Club, and then click Next.

People who work on the Club House drawings have no need to edit data relating to the site. Therefore the only editable layers necessary for the Club House project will be the Club House layer files.

5   Clear the 'All aliases…' check box and select 'Club House Layer files', and then click Next.

The following Select Default Aliases dialog box is displayed:
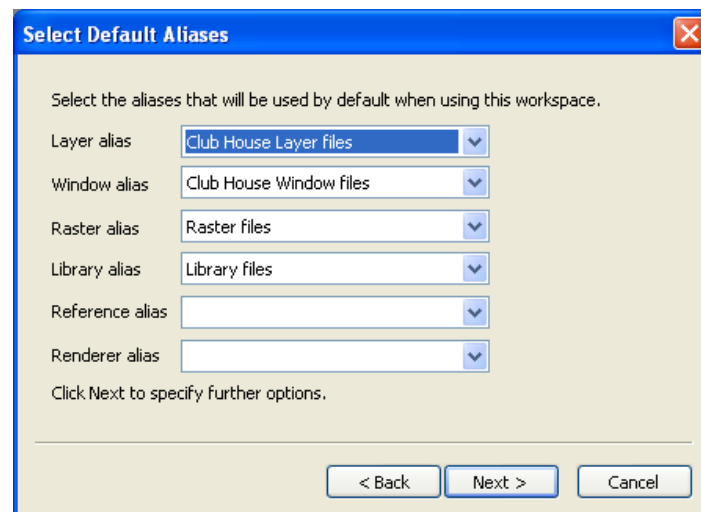
6   Ensure your Select Default Aliases dialog box is identical to the above, and then click Next.

7   Select the Open the Workspace check box and then click Finish.

8 Click the list arrow at the top of the Document Organizer and you will
see that it now contains two workspaces:
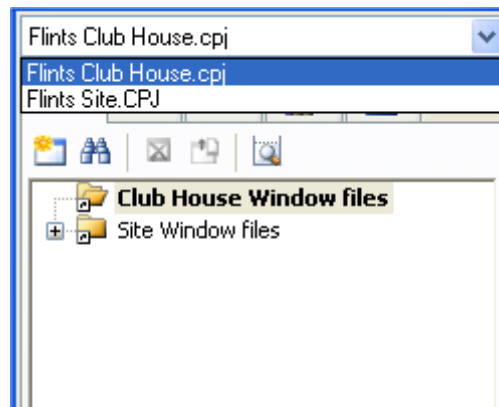
MicroGDS also adds a second placeholder window to the MicroGDS
window.

2. Importing data

In MicroGDS, you can import data into your project from external CAD systems. The data could consist, for example, of survey data drawings or structural steelwork drawings supplied by outside contractors.

However, because drawing methods and styles differ from office to office, and from project to project, the source data might not be organized in the way you would like, or might not conform to the drawing standards of your company. To help solve these types of problem, MicroGDS allows you to customize elements from the source drawings, such as the layer names and linestyles, before you import external data.

In this section you will import external data into your project. You will also populate the project with additional data by importing drawings created previously in MicroGDS.

2.1   Setting up library data

If you were working in a disciplined office environment, you would
probably have library files containing standard objects for each particular
type of project. For the purpose of this course, a number of library files
have been created for you. You will now replace your empty, newly
created library folder in Flints Health and Fitness Club folder.

1   Do not close your projects, but minimize MicroGDS.

2   Open Windows Explorer and locate your Advanced training data
        folder. Select the Library files folder and press CTRL + C to copy the
        folder and all the files.

3   Move to *drive*:\Flints Health and Fitness Club and press CTRL + V to
        paste the folder and files.

4   At the prompt '…do you want to replace the existing files?' click 'Yes
        to All'.

        The original Library files folder has been replaced by the new folder
        and its contents, from the Advanced training data folder.

5   Restore the MicroGDS window, and on the Document Organizer,
        click the Library Files tab.

6   To see the list of library files that are now available to the project,
        click the Library files alias.

2.2   Importing a DXF file

You can change layer and object naming conventions, and line and character style names in DXF and DWG files to suit your company's standards prior to importing the files into MicroGDS. This is done by using mapping tables.

Two mapping tables are supplied in the Advanced training data folder. You will make some final edits to these mapping tables before you import the data.

However, before you edit the mapping tables, you will use the DXFScan utility supplied with MicroGDS to list the element names used in the DXF file you will be importing.

Listing the element names

1   To start DXFScan, from Programs on your Start menu, click MicroGDS 10.0 Applications, and click DXF Scan.

2   On the DXF/DWG Scanner window, click Open file.

3   From the Files of type list, select DXF files and browse to \Advanced training data\Import data\Site\Survey data.DXF, and click Open.

- click the Styles tab, and note two character styles are listed; GRID_TEXT and STANDARD_TEXT

- click the Ltypes tab; there are five linestyles listed

- click the Layers tab and note that the layer names begin with G followed by 7 numbers

4   Close the DXFScan utility, by clicking Close.

Setting up the mapping tables

You are going to use an entity mapping table to change all the existing layer names starting with a G to meaningful names. The entity mapping table supplied with the training data is a short example of such a table and maps only layers. For a more comprehensive entity mapping table, see the sample mapping table (entmap.emt) in \Program Files\Informatix\MicroGDS 10.0\Programs.

1   Start a text editor such as Microsoft Notepad, and on the File menu, click Open.

2   Change the Files of type box to All Files, and then browse to *drive*\Advanced training data and double-click **Entmap.emt** to open it.

3   Add the following line to the top of the layer mapping:

G8030001=Building outline

Note: It is very important that you ensure throughout this section that your typing is accurate and that your capitalization is exactly as specified, otherwise your mapping tables may not work correctly.

4 On the File menu, click Save.

You will now look at the Style mapping table that has been supplied with this course, make some amendments, and map it to the DXF data. Style mapping tables have the extension .smt.

For more details, see Style mapping tables in Help.

Style mapping tables define which linestyles and charstyles are used when you import and export MicroGDS files.

5 From the Notepad File menu, click Open.

The style mapping table supplied is a short example, for a more comprehensive one, see the sample mapping table in Program Files\Informatix\MicroGDS 10.0\Programs.

6 Browse to *drive*\Advanced training data and double-click **Styles.smt** to open it.

You will now amend the file so that MicroGDS substitutes, for example, the linestyle DASHDOT2 for Chain line. When you import the DXF file, MicroGDS will use the linestyles you have specified.

7 Add the following:
   - under the heading **[DXFLinesin]** add the lines:
     DASHDOT2=Chain line
     FILLED=Fill 10%

The linestyles Chain line and Fill 10% have been predefined in the Company styles lines.sty.

   - under the heading **[DXFCharsin]** add the lines:
     GRID_TEXT=TNR7000
     STANDARD_TEXT=TNR3000

The charstyles TNR3000 and TNR7000 have been predefined in the Company styles char.sty using Windows font Times New Roman.

8 Save your file and exit Notepad.

You now have a customized style mapping table, an entity mapping table, and have defined the styles you wish to use in your project workspace. Next you will map the location of your style and entity mapping tables to your project.

9 In MicroGDS, open your Preferences dialog box and map your styles mapping table, using the File Locations tab. Click the Browse button next to Style mapping and browse to \Advanced training data\Styles.smt. Select the file and click Open.

10 To map your entity mapping table, click the Browse button next to Entity mapping and browse for \Advanced training data\Entmap.emt. Select the file and click Open. Select the Save preferences check box, and then click OK.

11 To use the tables, on the File menu click:
   - Mapping Tables, Styles
   - Mapping Tables, Entities

When the tables are in use, the commands are ticked.

Importing your data

1   From the Document Organizer list, select Flints Site.cpj.

2   On the File menu, click Import File, browse to \Advanced training data\Import data\Site\Survey data.DXF and then click Open.

The following changes to the DXF data have been made by MicroGDS reading your mapping tables:

- the grid is a dotted linestyle (Chain line)
- the fill is transparent (10% fill)
- the text styles are TNR3000 and TNR7000
- the layers are named instead of numbered

3   On the File menu, click Save Window & Layers and name the window definition **Site plan**.

Note that MicroGDS automatically displays the default window alias for the location in which to save the window definition.

You have now created the site plan. Next, you will import the data for the car park.

2.3   Importing a MAN file

When you imported the DXF data in section 2.2, the layer alias was set to Import Layer files. This is because you were importing data from an external source and you would normally want to check this data before moving it into your main project alias (in this case Site).

In this section you will be importing a MicroGDS MAN file which will be part of your main project, so you will override your default layer alias to Site Layer files. The MAN file contains the data for the site car park layout. You will then copy the car parking layers into the Site plan window definition.

Changing the default layer alias

For more information, see
The Alias Overrides dialog
box in Help.

1   On the File menu, click Alias Overrides.
      The Alias Overrides dialog box is displayed:
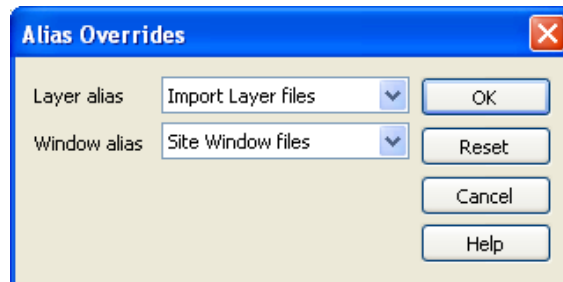
2   From the Layer alias list, select Site Layer files and click OK.
      Any data you now import will be created on layers in the location defined by the Site Layer files alias.

Importing the car park data

1   On the File menu, click Import File.

2   From the Files of type list, select 'MicroGDS Files (*.MAN,*XML …)'.

3   MicroGDS defaults to the last folder visited, so select Carparking.MAN and click Open.

      The Carparking.MAN file is imported into a new window definition called Parking & landscaping.wnd. Note that the name is derived from the principal window in the MAN file that you imported. The layers are created in the location defined by the Site Layer files alias.

4   On the Document Organizer, click the Layers tab.

5   Now, double-click on the Import Layer files alias to open it. Double-click on the Site Layer files alias to open it. Your Layers tab should look like this:
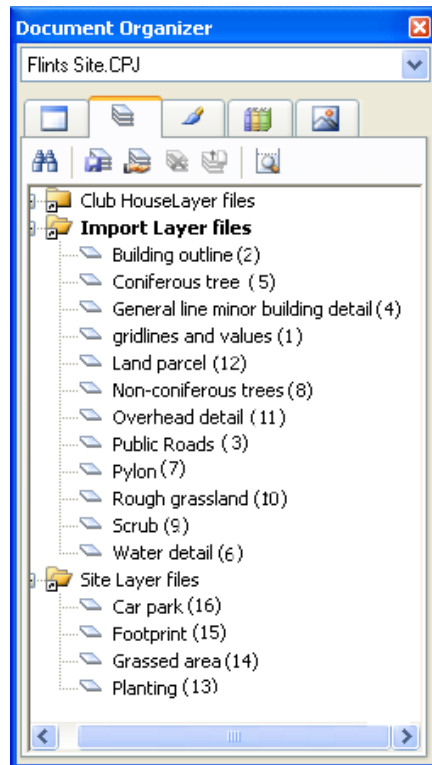
6   On the File menu, click Save Window & Layers.

Adding the car parking data to the Site plan window definition

You will now add the car parking data to the Site plan window definition so that all of your graphics can be viewed in the same window.

1   On the Document Organizer, double-click the Site plan window definition to ensure that it is displayed and current.

2   Click the Layers tab, open the Site Layer files alias and select all layers (four).

3   Using the left mouse button, drag the layers from the Document Organizer to the bottom of the Mini Window Editor.

The graphics on the layers are now visible as phases in your Site plan window definition.

4   On the File menu, click Close Project and on the Save Drawing dialog box, click Save All.

Note that at this point no data has been duplicated. You are viewing the same data in two window definitions:

- Site plan, and
- Parking & landscaping

Exercise 2: Importing the Club House MAN file

You are now going to import a MicroGDS MAN file into your Flints Club House workspace.

1   From the Document Organizer list, check that Flints Club House.cpj is current.

You can now import the MAN file.

2   On the File menu, click Import File.

3   Ensure the Files of type is 'MicroGDS Files (*.MAN,*.XML…)'.

4   Browse to the Advanced training data\Import data\Club House and then double-click on Flints club house.MAN to open it.

The data is copied into your Flints Club House.cpj in a window definition called 'Flints Club House.wnd'.

5   On the File menu, click Save Window & Layers.

Note that Flints Club House is shown under the default window alias (Club House Window files) on the Document Organizer.

Later in the training course, you will combine the Club House layers, with the Site layers.

You will notice that if you are using the MicroGDS default colours, some phases use very pale colours. In the next section you will redefine the colours.

3. Colours

In MicroGDS you can create as many colours as you require. You can assign colours to phases, objects, individual primitives, linestyle strokes, background, and selected graphics. In 3D drawings you can also assign colours to materials and lights.

When you first start MicroGDS, a set of default colours is stored in your Document Properties. You can define new colours, or edit existing colours, using the Document Properties command.

You can also copy the colour table stored in the current document to the Document Properties; and copy the colour table from the Document Properties to the current document.

In the next section you will replace the document default colours with a set of colours predefined for this training course.

3.1   Copying colours to the Document Properties

1   Using Windows Explorer, go to the folder Advanced training data, and double-click Colour Palette.MAN to open it in MicroGDS.

2   To display the document default colours, on the File menu, click Document Properties.
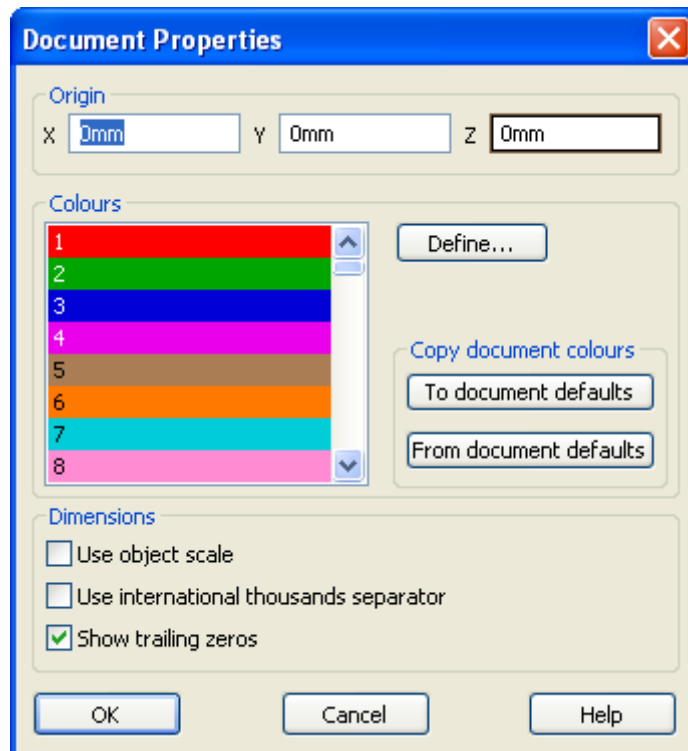
3   To copy the colour table stored in the current document to the Document Defaults (making those the default colours), click 'To document defaults' and then click Yes at the prompt.

The colours are copied from the Colour Pallete.MAN file to your Document Defaults.

4   Click OK to close the Document Properties dialog box.

5   Close Colour Pallete.MAN.

3.2   Copying colours from the Document Properties

1   On the File menu, click Document Properties.

2   Click From document defaults, and click Yes at the prompt

3   Close the Document Properties dialog box.

The colours are updated in the Club House window definition, and the RGB (colour) values are now saved in the Flints Club House workspace.

When you create a new project workspace, MicroGDS uses the colours stored in the Document Defaults. If you edit a colour or overwrite the document default colours, MicroGDS writes the RGB values of each colour to the project workspace file. From that point the project workspace will ignore the registry colours and use its own colour definitions.

Viewing your workspace to see the colour values

Using a text editor, you can view Flints Club House project workspace and see how the RGB values have been assigned.

1   Using Windows Explorer, go to *drive*:\Flints Health and Fitness Club and click on Flints Club House.cpj.

2   Press SHIFT and with a right-button mouse click, select Open With…

3   Select Notepad from the Open With dialog box. Ensure the option 'Always use this program to open this type of file' is **NOT** selected, and then click OK.

4   Scroll down to [MGDS Colours]; the colour values are then listed.

5   Exit from Notepad.

6   In the next exercise you will copy the colours from the Document Properties to the Flints Site project workspace.

Exercise 3: Copying colours from the Document Properties to Flints Site workspace

In this exercise, you will save the colours from the Document Properties to Flints Site workspace.

- Open Flints Site workspace and the Site plan window definition, and follow the steps in 3.2.

4. Customizing the user interface

Although MicroGDS provides a default set of commands and toolbars, each MicroGDS user will have their own set of features that they commonly use, or they may prefer to place elements, such as toolbars, at different positions around their screen. Each screen configuration will vary from user to user.

MicroGDS provides a set of tools that you can use to customize your user interface. For example, you can create new toolbars, add items to toolbars and edit status toolbars. In addition, you can attach a command that takes effect when you click the right mouse button, and add commands to run other applications from MicroGDS.

In this section you will customize toolbars, add your own right mouse button menu (a shortcut menu), and assign shortcut keys to some common MicroGDS menu commands.

If you intend to revert to the settings that were in place at the start of the course, ensure that you keep a note of the current MicroGDS settings.

4.1   Customizing toolbars

You will create a new toolbar (a user toolbar), name it 'My toolbar', and
add a number of buttons to it. The buttons you add give access to some
of the commands that you will be using later in the course.

Creating a new toolbar

1   To open the Toolbars dialog box, press CTRL + T.

2   On the Toolbars tab, click New, and in the Toolbar name box, type:
My toolbar and click OK.

Your new toolbar is displayed, ready for you to add buttons to:

3   On the Toolbars dialog box, click the Customize tab, and select Axes
from the Categories list.

4   Select Axes Move from the Commands list, and drag it onto your new
toolbar. Repeat for Axes Reset.

5   Add the following buttons:
- Object Replace   (Objects category)
- Object Sequence   (Objects category)
- Cut   (Selection category)
- Paste   (Selection category

Your new toolbar will now look like this (don't worry if the order of
buttons is different):

6   Move 'My toolbar' to a convenient place in your toolbar area.

In order to save duplicating commands, you will now remove two of
the commands you have added to My toolbar from their default
toolbars.

7   With the Customize tab still active, drag the Cut button on the
Selection toolbar (in the MicroGDS toolbar area) to the graphic
screen area and then release the button - it disappears from the
toolbar.

8   Repeat step 7 for the Paste button, and then click OK to close the
Toolbars dialog box.

9   To save your toolbar changes immediately, select Save preferences
on the Preferences dialog box and then click OK.

Adding a status item to a toolbar

You will now add the status item Charstyle to My toolbar and then edit the label text.

1 Open the Toolbars dialog box, and then click the Status bars tab.

2 From the Status items list, drag Charstyle to the end of My toolbar.
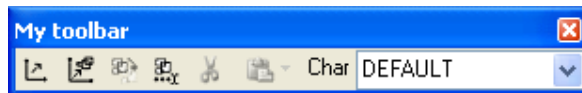

You will now change the status item label from Char to 'current charstyle' and increase the width of the charstyle display box.

Changing the status item label

1 On the Status bars tab on the Toolbars dialog box, click Edit.
The Edit Status Item dialog box is displayed:
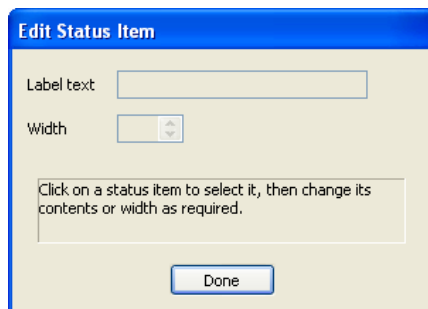
2 On My toolbar, click the word Char.
The Edit Status Item dialog box is updated to reflect your selection:
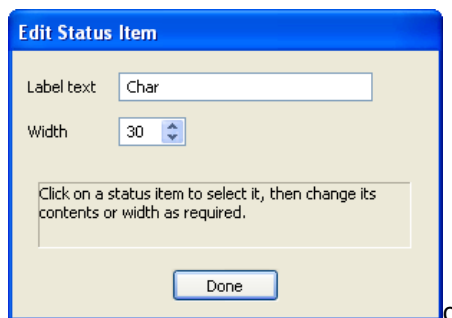
3 In the Label text box, type **current charstyle**.
Note that the width box increments automatically.

Adjusting the charstyle display box width

1 On My toolbar, click the Charstyle display box and increase the width to 180.

2 Click Done, and then click OK.
My toolbar is now as shown below:
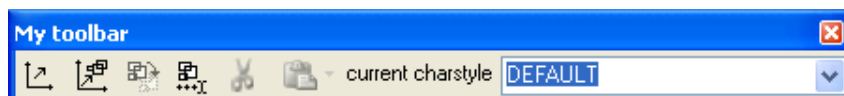
4.2   Creating a flyout toolbar

Displaying a large number of toolbars can reduce the available working
area. To make a number of commands available without using too much
screen space, you can use 'flyout toolbars'. Flyout toolbars display only
the first button, the rest 'fly out' from this button. Flyout toolbars have a
small triangle on the bottom right of the button:
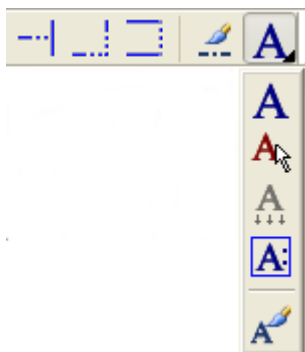
When you use a command on a flyout toolbar, its button moves to the top
of the toolbar.

To create a flyout toolbar:

1   Open the Toolbars dialog box, click the Flyouts tab and select Text
(System) from the toolbar names. Drag the name onto the end of My
toolbar.

2   On the Toolbars dialog box, click OK.

3   Press the mouse button on the flyout toolbar button to display the list
of commands:
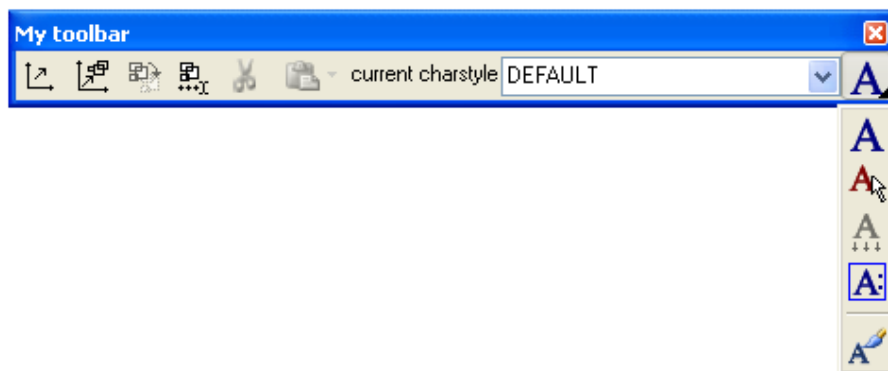
4   If you already have the Text toolbar displayed, to save space, drag it
on to the graphic screen, and then click the cross in the corner to
close it.

You can return all system and status toolbars to their original settings at a
later time, using Reset All on the Toolbars dialog box.

Note that toolbars you create can also be used as flyouts. You can also
add flyouts to system toolbars and remove flyouts as required. For full
details, see Help.

4.3   Customizing keyboard shortcuts

For a full list of default shortcut keys, see Keyboard shortcuts in Help.

MicroGDS provides many default shortcut keys such as F2 to open the Window Editor and F7 to select all graphics. It is possible to create your own shortcut keys, and in the following steps you will create a shortcut key to save the current view.

1   Open the Preferences dialog box and click the Shortcuts tab.

2   In the Command box, click View to open the View menu commands.

3   Select the Save View command.

4   In the 'Type new shortcut key' box, press F12.
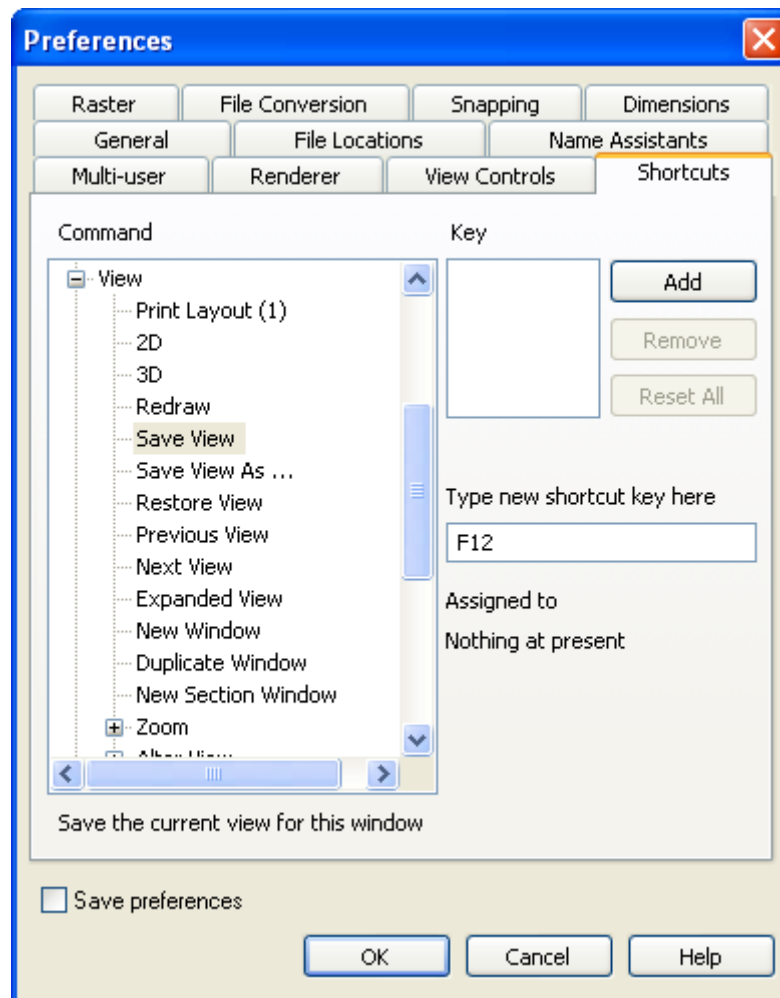
5   Click Add and then click OK.

Note that you can use any combination of SHIFT, ALT, and CTRL keys. F12 is used in this exercise.

6   Zoom in to any area in your current window definition and save the view using F12, change the view and then click Restore View1 on the View menu.

4.4   Customizing menus

When you start MicroGDS and open a new document, MicroGDS provides the following menus.

You can customize the menus to suit your particular requirements. For example, you can add, remove, and move commands between menus. You can also create a new menu, and add commands to it.

To understand how to customize MicroGDS menus, you will add a menu called My Menu, which will provide the following actions:

- start the Windows Notepad
- run the sample application Bonus tools

To customize a MicroGDS menu, you create a text file in Windows Notepad or similar, and save it with a .cfg extension. You then point to the location of the .cfg file in your Preferences.

In the MicroGDS 10.0 Programs folder there is a sample cfg file called sample automenu.cfg. It contains an example of changes to the Help menu, a new Tools menu, and an example of a right-click Shortcut menu.

4.5   Creating a new main menu

You will now create the following new main menu:

1   Open Notepad from your Accessories menu, and on the first line type:
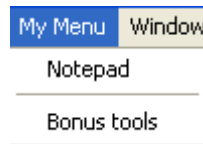
[Menu]

MicroGDS looks for the word [Menu] and anything after that in the correct format will be displayed on the menu bar.

This line enables MicroGDS to identify that the following entries are intended as menu items.

2   On the next line, type:
; My Menu

The semicolon '**;**' at the beginning of the line signifies that this line is a comment and will be ignored by MicroGDS.

3   On the next line, for the menu name that will appear on the menu bar type:
M&y Menu\=X

The ampersand (&) indicates that the next letter will be underlined to provide an access key for the menu (see the illustration of My Menu above). This will enable you to press ALT + Y to access the menu.

4   On the next line, type:
M&y Menu\&Notepad=notepad.exe

- My Menu is the name of the menu to which the following item will be added
- The forward slash separates the main menu title from the menu item
- Notepad is the command that will appear on the menu
- The '=' character separates the command from the program name
- notepad.exe is the name of the program file

For more details on flags, see API Help, menu function CadAddMenuCommand.

5   To create a separator bar, on the next line type
{/mmw} M&y Menu\---=X

- {/mmw} indicates what sort of window must be open in MicroGDS for the separator to appear on My Menu:
  first m = menu flag
  second m = the menu will be available in a single user document

  w = the menu will be available in a multi-user window

- M&y Menu is the menu to which the item will be added
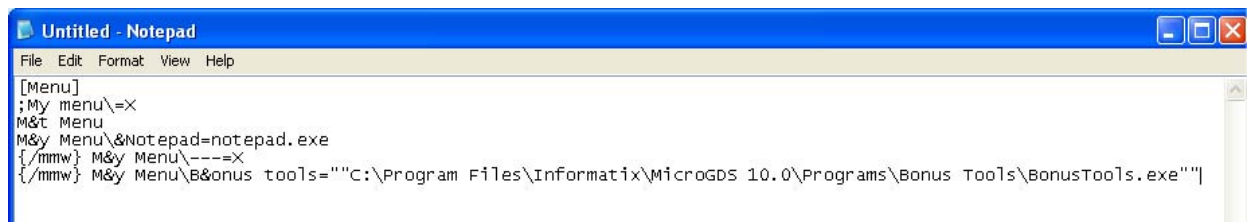- --- (three dashes) indicates a separator bar will be added

- =X this must be included (X can be any single character)

You will now add the Bonus tools sample application.

6 Add the following line:
{/mmw} M&y Menu\B&onus tools=""C:\Program Files\Informatix\MicroGDS 10.0\Programs\Bonus Tools\BonusTools.exe""

7 Save your file as **My Menu.cfg** in your Flints Health and Fitness Club folder.

Your file should now look similar to this:

```
[Menu]
;My menu\=X
M&t Menu
M&y Menu\&Notepad=notepad.exe
{/mmw} M&y Menu\----=X
{/mmw} M&y Menu\B&onus tools=""C:\Program Files\Informatix\MicroGDS 10.0\Programs\Bonus Tools\BonusTools.exe""
```

Assigning the menu file to MicroGDS

1 In your Preferences, click the File Locations tab, and click the Menu configuration Browse button. Browse to your project folder and double-click your .cfg file to open it.

2 Click Save preferences, and then click OK.

This file is loaded and will be read the next time you start MicroGDS.

3 To see My Menu, leave MicroGDS and click Save All, then restart MicroGDS.

4 Click My Menu (or press ALT + Y) and you will see one item, Notepad.

5 Open your Flints Club House workspace and then open the Flints Club House window definition.

6 Click My Menu. You will now see an additional item (Bonus tools) and one separator. These were not visible before because you specified they would only be visible when a multi-user window was open.

The bonus tools program mounts a toolbar offering several commands, including a cloud generation command, a draw arc command, a command to check the number of vertices in a primitive, and a parabola command.

Note that if your company uses a specific cfg file, remember to set your preferences back to the company configuration file after you complete this training course.

4.6   Creating a right-click, popup menu

You will now create a right-click, Shortcut menu for the right mouse button that will provide the following commands.
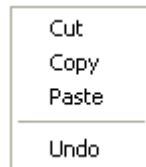
Note that in the MicroGDS user interface, and in the rest of this training course, a right-click, popup menu is referred to as a shortcut menu.

1   Go to My Menu.cfg in Notepad.

For a full description of flags, see the API help topic CadAddMenuCommand.

You will now add the following lines to your cfg file. Note that menu items added to MicroGDS can be flagged to specify the type of menu to which they apply. These flags must be placed in braces {}. In the following example, the flags mp indicate that the following is a right click shortcut menu.

2   At the bottom of the file, type the following comment:
; right click shortcut menu entries

3   On the next line, type the following right mouse click command:
{/c5145 /mp}Cut=X

where:
the braces   enclose the flags
/c   is the flag indicating that the following command (specified by its command identifier) is a built-in MicroGDS menu command

For a full list of program identifiers, see mgdsmenu.txt in your MicroGDS Custom folder.

5145   is the command identifier (in this case, the identifier for Cut)
/mp   is a shortcut menu available when a document is open
Cut   is the command name that will appear on the menu
=X   must appear, (X can be any single character)

4   On the next two lines type:
{/c5143 /mp}Copy=X
{/c5151 /mp}Paste=X

5   On the next line, type:

    {/mp}---=X
where:
--- (three dashes) indicate a separator bar will be added

6   On the next line, type:
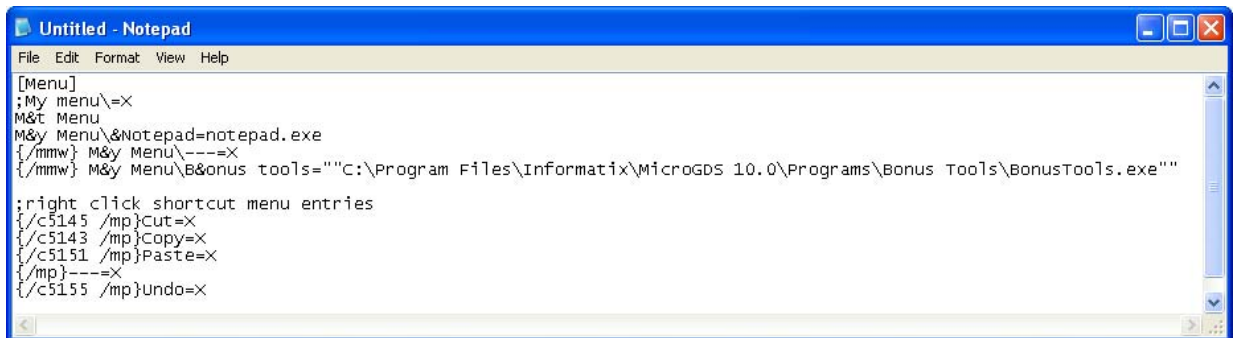
{/c5155 /mp}Undo=X

7   On the File menu, click Save.

My Menu.cfg should now look like this:

```
[Menu]
;My menu\=X
M&t Menu
M&y Menu\&Notepad=notepad.exe
{/mmw} M&y Menu\---=X
{/mmw} M&y Menu\B&onus tools=""C:\Program Files\Informatix\MicroGDS 10.0\Programs\Bonus Tools\BonusTools.exe""

;right click shortcut menu entries
{/c5145 /mp}Cut=X
{/c5143 /mp}Copy=X
{/c5151 /mp}Paste=X
{/mp}---=X
{/c5155 /mp}Undo=X
```

This file will be read the next time you start MicroGDS.

8   To see your changes, leave MicroGDS and then restart it.

9   Open Flints Club House workspace and open the Flints Club House window definition. To see the shortcut menu, click your right mouse button in the window definition.

Exercise 4: Customizing the user interface

Toolbars

1 Create a new toolbar 'My toolbar 2'.

2 Add the following commands:
- Save View (View category)
- Restore View (View category)
- Clone Window (File category)
- Align to Set XY Axes (View category)

Main menu

You will now add the MicroGDS Help Synchronize program to My Menu.cfg.

1 In Notepad, open My Menu.cfg.

2 Insert the following at the bottom of My Menu:

{/mmw} M&y Menu\&Help Synchronize=""C:\Program Files\Informatix\MicroGDS 10.0\Programs\Help Synchroniser\ Help Synchroniser.exe""
{/mmw /s} M&y Menu\&Edit text and spell checker=C:\Program Files\Informatix\MicroGDS 10.0\Programs\Edit Text\Edit Text.exe""
(The /s flag enables the menu command when you have graphics selected.)

3 Save My Menu.cfg.

4 Exit MicroGDS and save your settings on exit. Then restart MicroGDS.

First you will use the edit text program you have added to My Menu. Note that this facility requires Microsoft Word to be installed on your computer and will not work if it is not installed.

1 Open the Flints Club House workspace and the Flints Club House window definition.

2 In the Mini Window Editor, double-click the Walls phase to make it current and editable. Make all other phases hittable.

3 Press F7 to select all graphics.

4 Click My Menu, Edit text and spell checker.

5 In the Edit Text dialog box, click Spell Check, and accept the correction of Beaxtician to Beautician. Ignore the spelling of 'Comms'.

6 Reset all phases to editable.

You will now use the Help Synchronize program you have added to My menu:

1   On My Menu, click Help Synchronize. The Help Sync toolbar is started.

2   Select all three Help Sync buttons (with question marks).

3   Click a number of random toolbar buttons; the appropriate Help topic is shown.

4   To close Help Synchronize, click on the HelpSync toolbar.

Shortcut menu

1   Add the following commands to the bottom of your shortcut menu:
- a separator bar
- Query Details = 5225
- Draw to Selection = 5440

2   Save My Menu.cfg.

3   In MicroGDS, exit and click Save All at the prompt.

4   Restart MicroGDS and open the Flints Club House workspace and Flints Club House window definition to see your new shortcut menu commands.
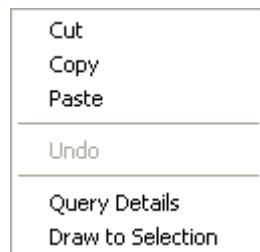
5. Viewing your data

When you work with large amounts of data over vast distances, viewing the extent of the graphics on a drawing could be very difficult and time consuming.

For example, imagine trying to zoom in to some detailed, intricate work and then zooming out to the broader picture. Locating a useable view extent with which to work could be difficult. Using the Navigate window in MicroGDS, you can use a thumbnail view of your graphics to navigate around your drawing more easily and quickly.

MicroGDS also provides tools so that you can rotate views, personalise the view controls, and also save and restore views for future use.

In this section, you will learn how to work more easily with views, such as how to set up, save, and create new and rotated views.

5.1 Choosing your view controls

To help you see the effect of the various view controls, ensure that the Flints Club House window definition, in your Flints Club House workspace, is open.

View buttons

MicroGDS offers a large number of view control buttons. Each one can be displayed:

- on an open window definition
- on the Navigate window

They are also all available on the View toolbar. You can selectively switch each one on and off by using the View Controls tab on the Preferences dialog box.
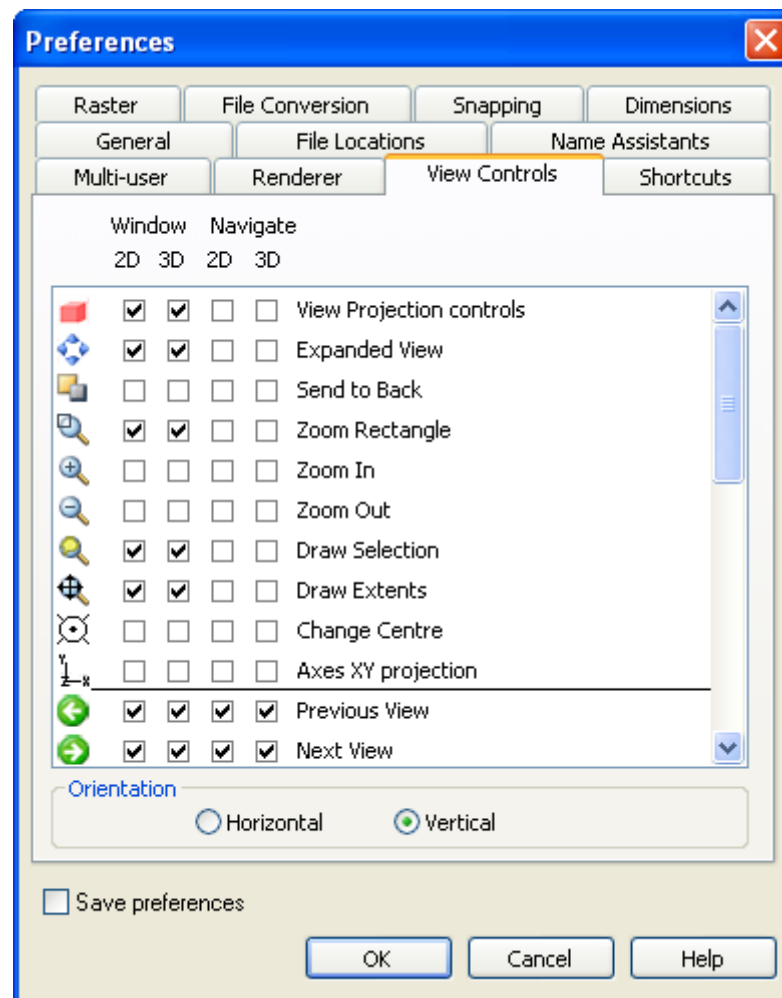
The view controls can be displayed on a 2D view, a 3D view, or both. You can choose whether they are displayed vertically down the left-hand side of a window definition, or horizontally along the bottom of a window definition. Note that the view controls are always displayed horizontally, along the bottom of the Navigate window.

You can also add view buttons to your own toolbars as described earlier.

Customizing view controls

1 On the File menu, click Preferences, and click the View Controls tab.

2 Under the Window 2D column:

- select Zoom In 🔍 and Zoom Out 🔍

- select Save View As 💾

- scroll down the list and clear the Zoom bar 🔳
- click OK to see the results

Using the Navigate window

An additional aid to navigation is the Navigate window. The Navigate window can be displayed and hidden using the Window menu. The Navigate window can be docked or floated as required.

1 If the Navigate window is not currently displayed, on the Window menu, click Navigate.

For more details, see Navigating the view in Help.

The Navigate window is opened with the default viewing buttons as illustrated below. You can change the buttons that are displayed, using your Preferences.
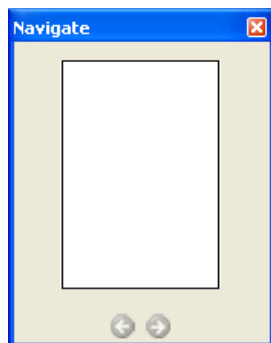
In a 2D view the Navigate window shows a thumbnail of the saved view extent. You can navigate the view using the viewing buttons; you can also use the thumbnail to zoom in and out.

2 In the window definition, use the Zoom In button to enlarge the Restaurant area.

3 To change the zoomed in area, point to the highlighted area in the Navigate window and drag it around. The corresponding area is panned in your window definition..

4 To change the view extent, press your right mouse button over the Navigate window and drag the mouse to define the required view.

5 To Nudge the View up, down, left or right, on the View Menu select Alter View, Nudge, and then the required direction.

You can specify the amount that you nudge the view from View, Alter View, Nudge, Parameters. You can specify two values for each

parameter, one for when the Nudge command is given normally and the other for when the Nudge command is used with Shift held down.

Using a mouse wheel

If you have a wheel mouse, you can also use the wheel to navigate the view (in both the window definition and the Navigate window). Rotating the wheel away from you zooms in, and rotating the wheel towards you zooms out.

Draw to selection

The Draw Selection viewing button allows you to zoom in to show all graphics that are currently selected. This can be particularly useful when you are editing a number of objects dispersed around the drawing. The Draw Selection command allows you to zoom in quickly.

Note that you have added the Draw to Selection command to the shortcut menu.

5.2   Saving views

When you are working on a large project you can create any number of
saved views for a particular area of graphics.

1   Open the project Flints Site.cpj, click to expand the Parking &
landscaping window, then double-click View 1. Use your shortcut
menu to rename View 1 to **Parking and landscape area**.

2   Zoom in to the area illustrated here:
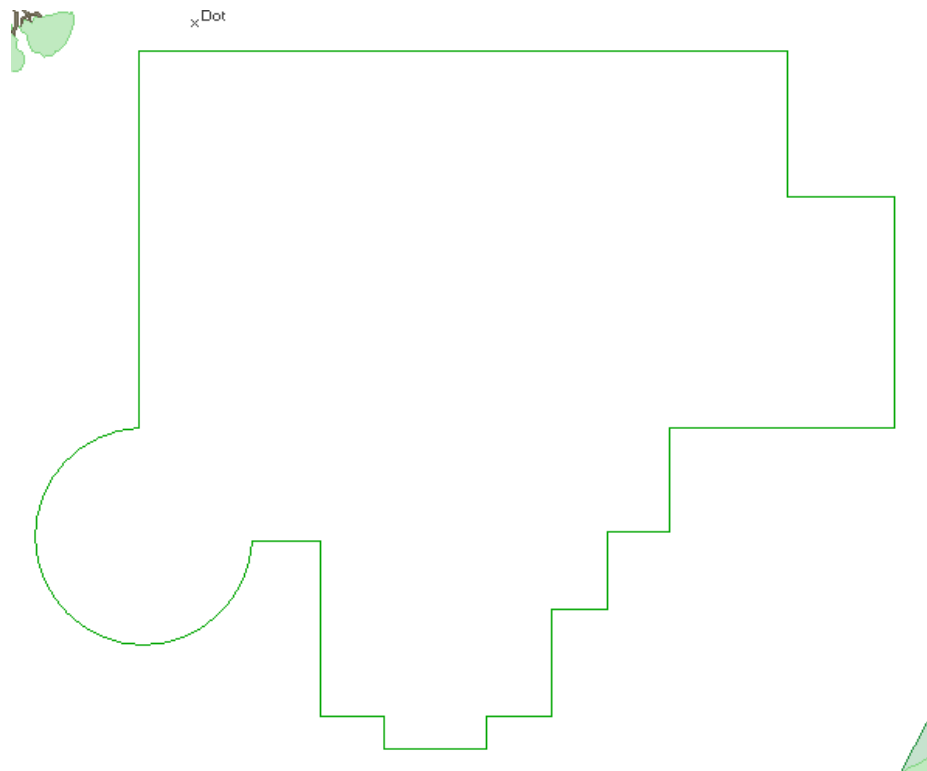
3   On the View menu, click Save View As.

4   Type **Building footprint** in the View Name dialog box**.**

5   Repeat the previous steps to create the saved view illustrated below. Name the saved view **Car park island.**
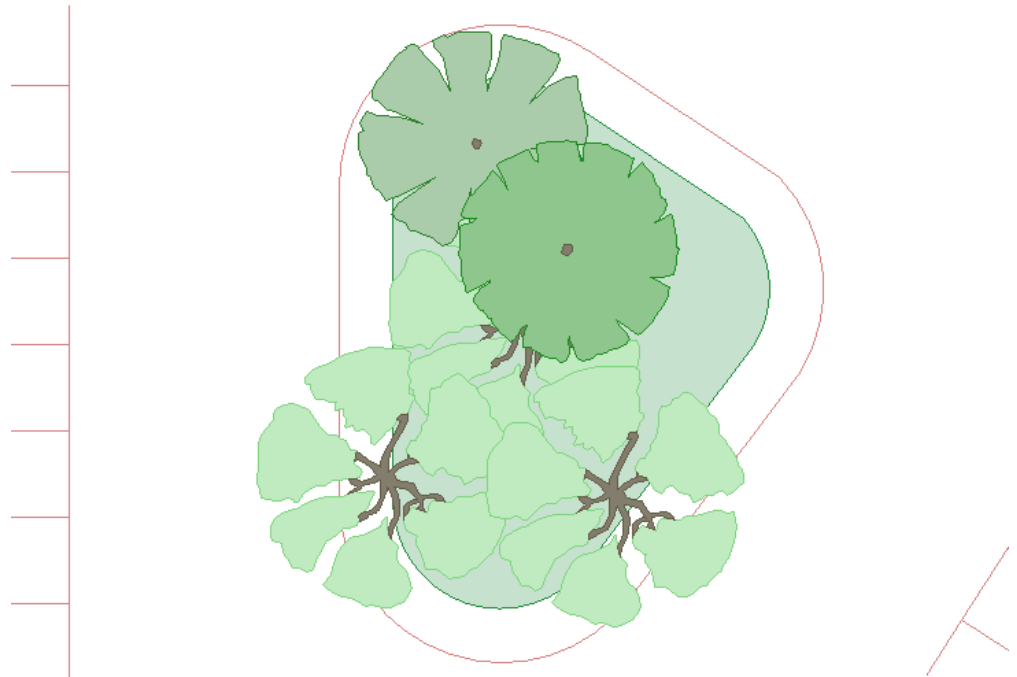
5.3 Rotating views

You can align the graphics in a window with the set XY axes. This enables you to view your graphics from any angle you wish.

To illustrate the Align to Set XY Axes command:

1   Double-click the Parking & landscaping window definition.

   You will now orientate your view so that it is orthogonal to the long line of parking bays.

2   On My toolbar, click Axes, Move.

3   To place your axes, click on your graphics as illustrated below; ensure that your Y axis is pointing in the direction shown, and then press ESC.
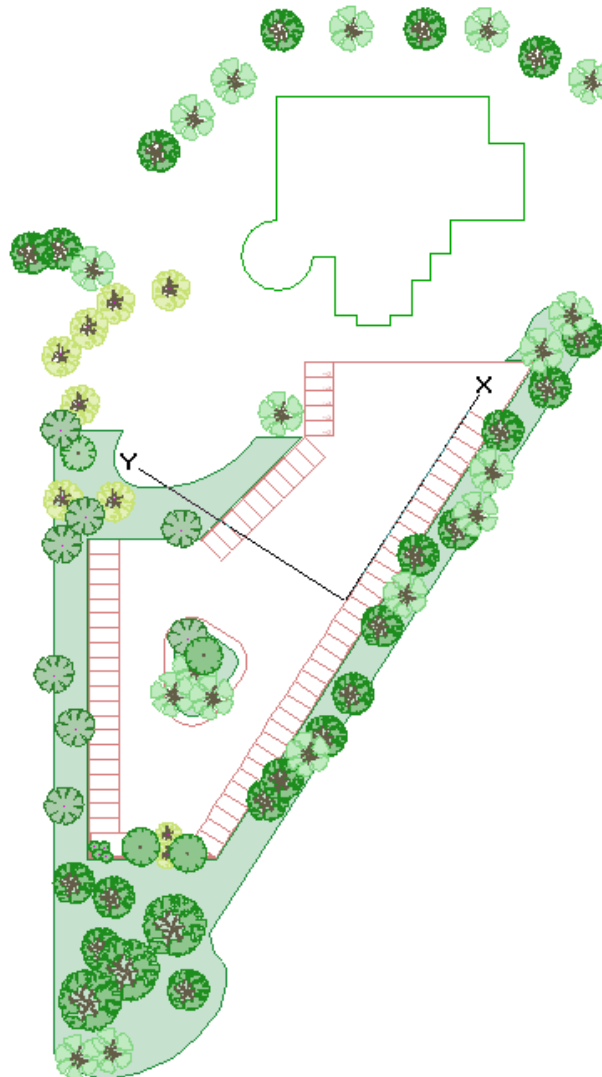
4   On My toolbar 2, click Align to Set XY Axes.

The graphics are rotated to align with the XY axes. You may need to click the Expanded View button on the View toolbar:
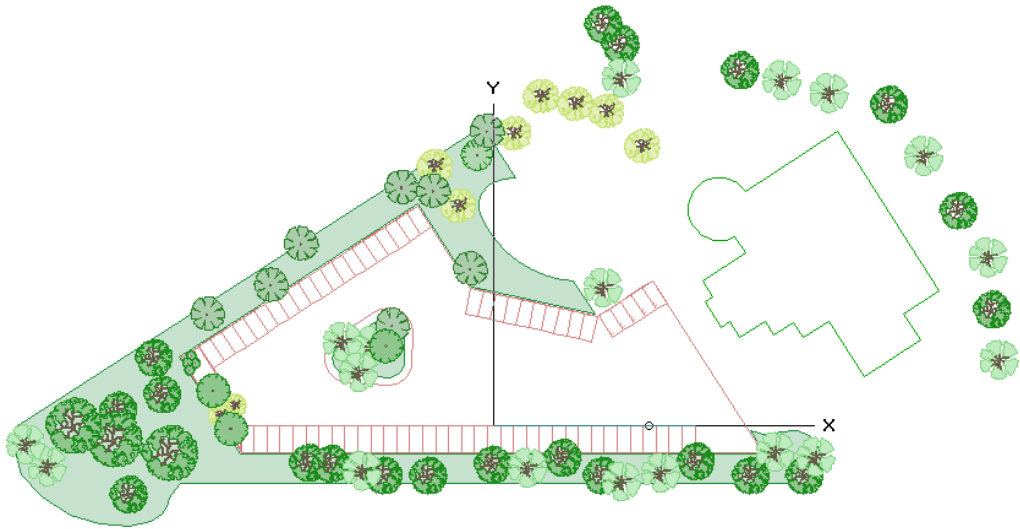
5   Zoom in to an area that just encloses all the Parking bays:

.
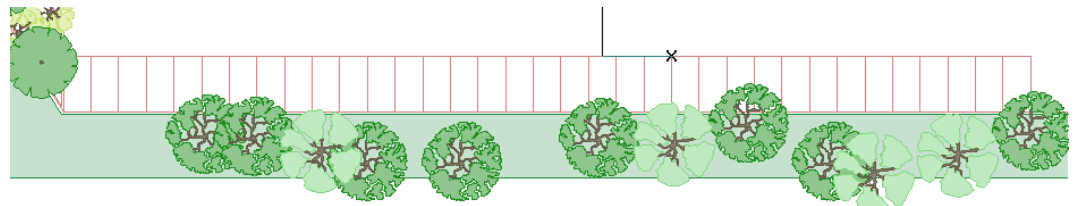
6   On the View menu, click Save View As, and name your new view **Parking bays rotated**.

Exercise 5: Saving views

You will save a rotated view of five car parking spaces, which you will designate the visitors parking area.

1   Select your Parking and Landscape area view, and zoom in to the area illustrated:
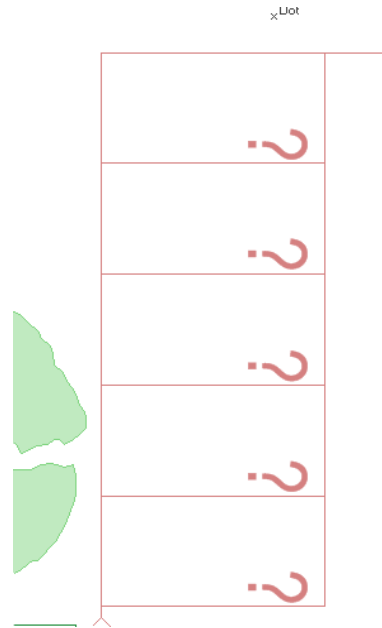
The question marks represent missing references in *secondary annotation* which is used later in the course. You can use secondary annotation to automatically insert information into a text primitive, such as today's date.

2   Set your axes along the line shown below.

3   On My toolbar 2, click Align to Set XY Axes.
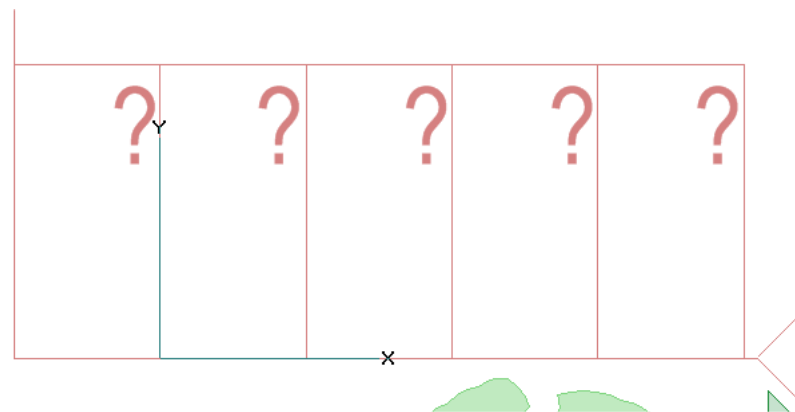
4   On the View menu, c lick Save View As and name your new view **Visitors parking.**

Managing objects

In the MicroGDS Foundation Course, you learned how to create new objects and also how to edit and rename existing objects.

In this section you will learn how to produce a list of object names used in your drawing. Next, you will rename a range of objects in a sequence and then use the object name and its sequence as annotation on the drawing.

5.4   Listing objects

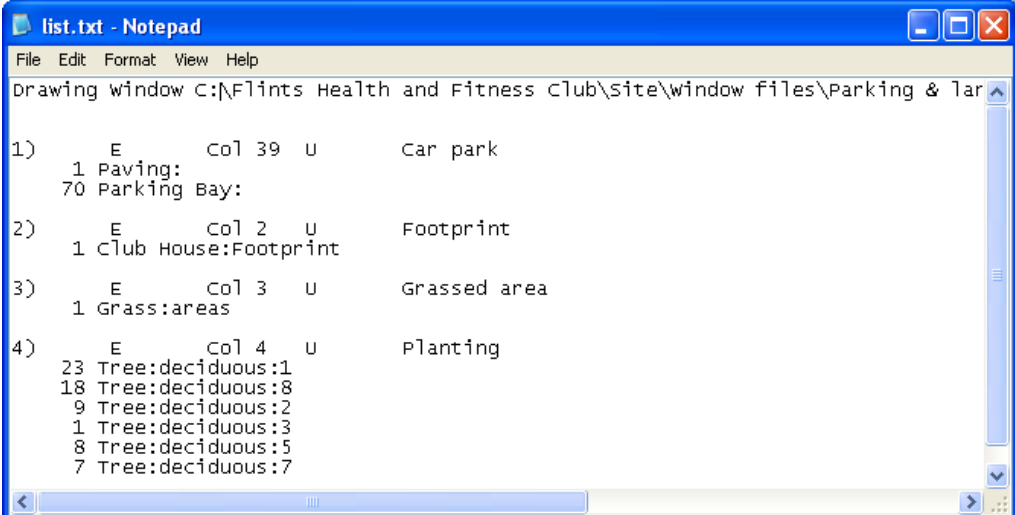MicroGDS provides two methods of producing reports about objects:

- Object, List which is covered in this section
- Object, Schedule which is covered later, in section 9

For full details, see Listing objects in Help.

Object List scans the active window definition and produces a list of all the objects (and instance objects) included in each visible phase, and the number of times they occur.

To list all objects in the Parking & landscaping window definition:

1   Ensure that the Parking & landscaping window definition is the active window.

2   On the Object menu, click List.

3   MicroGDS generates a text file, listing the objects as follows:

```
📄 list.txt - Notepad
File  Edit  Format  View  Help
Drawing Window C:\Flints Health and Fitness Club\Site\window files\Parking & lar

1)      E       Col 39  U       Car park
     1 Paving:
    70 Parking Bay:

2)      E       Col 2   U       Footprint
     1 Club House:Footprint

3)      E       Col 3   U       Grassed area
     1 Grass:areas

4)      E       Col 4   U       Planting
    23 Tree:deciduous:1
    18 Tree:deciduous:8
     9 Tree:deciduous:2
     1 Tree:deciduous:3
     8 Tree:deciduous:5
     7 Tree:deciduous:7
```

4   Close the file.

5.5   Sequential numbering

The 35 car parking bays along the bottom of the car park in the Parking & landscaping window definition are each to be painted with a sequential bay number, starting from the left.

For full details, see Secondary annotation in Help.

The bay numbers will be displayed as individual objects and text blocks using secondary annotation. Each object will be renamed with the Object Rename Sequence command, so that each object will have the same root name, with an incremental number as its last facet.

Attaching a text block to the current bay

1   In the Document Organizer, double-click the Parking bays rotated view to open it.

2   In the Mini Window Editor, ensure the Car park phase is set to editable and is the current phase. Set all other phases to hittable.

3   Zoom in to the first parking bay on the left of as illustrated below.

4   On the Object menu, click Rename, Object.

5   Click the parking bay with an Inside snap (the object to rename).
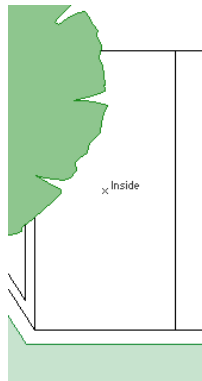
6   In the Rename Object dialog box, type 'Parking Bay:1', and click OK.

7   Press ESC.

You have added a second facet to the object name, this being '1'.

8   Click on to Parking bay:1 to select it, and on My toolbar click Axes, Reset and click on to Parking Bay 1 with an Inside snap.

Setting the font

To set the font for the bay number text, you will change the current charstyle.

1   From the Styles tab on the Document Organizer, open the Charstyles category, open …\Styles and select Arial Narrow 2000 High.

2   From the shortcut menu, select Set as current.

Adding secondary annotation to your object

1   From the flyout toolbar on My toolbar, click Construct Text.

2   In the text box, type **^(facet 2)**. Select the top right justification button, and then click OK.

^(facet 2) means that the second facet of the object name will be added to the object and displayed as text – in this case the number 1.

3   Place your text with a point snap in the top right-hand corner of the parking bay.

The number 1 is inserted as shown:
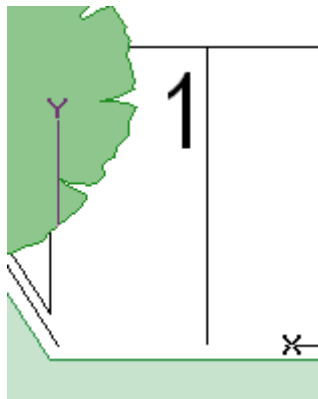
Replacing objects with another object

In MicroGDS you can replace a number of objects with copies of another object. You will now copy the first bay (with its number) and replace the remainder of the parking bays with it.

1   On My toolbar 2, click Restore View to display the entire line of parking bays.

2   Press F10 and select the first parking bay (the bay and the number 1 should both be selected).

The commands Replace and Superimpose use graphics from the Clipboard.

3   Using the shortcut menu, click Copy.
A copy of the first bay is placed on the Clipboard.

4   Press F6 (Fence) and draw a line as illustrated below, ending the line with a dot snap. Press ENTER to select all objects which the line crosses.

All the parking bays except the first bay should now be selected.

5   On My toolbar, click Object Replace.
        All the bays are replaced with the Clipboard copy of the first bay, and
        all are currently numbered 1.
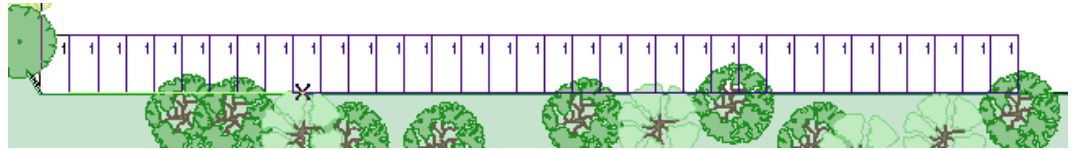
Renaming the objects in a numeric sequence

1   On My toolbar, click Object Rename Sequence, and click OK on the
        Rename Object dialog box to accept the first object name. Click onto
   each of the parking bays in turn, with an Inside snap, starting with
        bay 1.

        The text is automatically updated with sequential numbers.
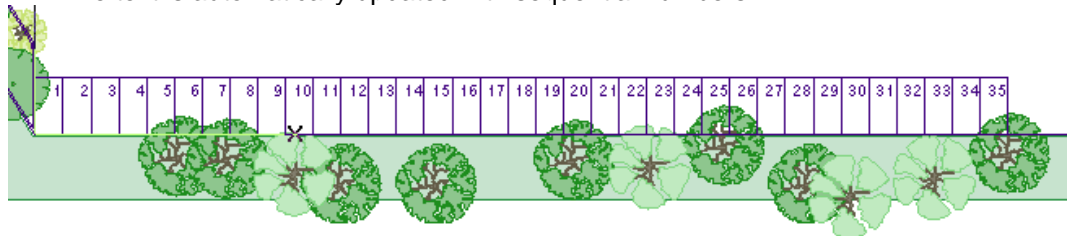
Exercise 6: Sequential numbering

You are now going to use Object Sequence to number the 5 parking bays as illustrated below.

1 In the Document Organizer, double-click the Visitors parking view to open it.

2 Ensure the Car park phase is editable and all other phases are hittable.

3 In Object mode, select the first bay. On My toolbar, click Object Rename Sequence and add 36 as the second facet.

4 Click on the five bays starting from the left.

.
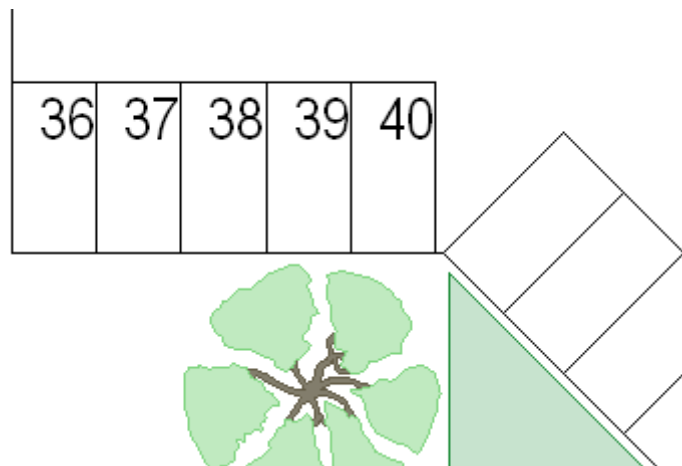
5 On the File menu, click Save Window & Layers.

6 Close your Flints Site workspace.

6. **Working with layers and phases**

Layers contain the data in a project and are used to maintain a manageable amount of graphics. If all the data in a drawing were on one layer, you can imagine how difficult it would be to control how the data is viewed and how time consuming it would be to refresh the screen.

In this section you will learn about the relationship between layers and phases, how layers are viewed in windows, how to copy a layer, and how to filter the data on one layer to view it in different phases.

6.1   Creating new phases to reference an existing layer

Note that the furniture in the Flints Club House includes the exercise equipment.

You will use the Furniture layer data provided in the Flints Club House workspace for this exercise.

In this first exercise, you will filter the furniture into three phases. The first phase will reference all the furniture except for the internal and external dining furniture. The second phase will reference the internal dining furniture and the third phase will reference the external furniture.

Note that although the data appears in three phases, the graphics have not been moved or copied but simply filtered to display them in their respective phases.

Copying phases

1   Open Flints Club House.cpj and double-click the Flints Club House window definition to open it.

In the Mini Window Editor, note the phases that are included in the current window definition.

2   Double-click the Furniture phase to make it current.

3   Click the right mouse button over the Linked layer column in the Mini Window Editor and select Invert Selection. Under the Status column select Hittable.

4   To make a copy of the furniture phase, select the phase, press CTRL and drag the phase to the bottom of the list. Repeat again to make a second copy of the furniture phase.
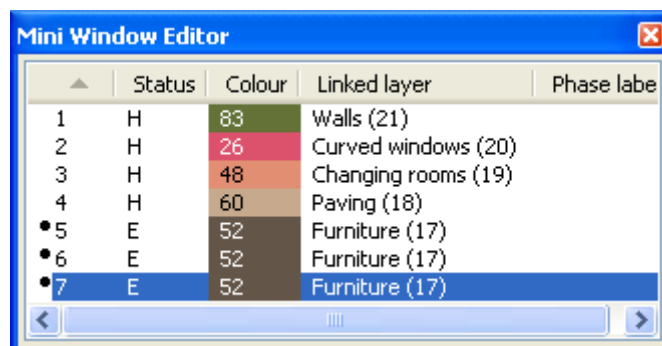
You now have three phases looking at the same layer data (furniture)−notice that the layer link numbers are the same. You have not made three copies of the data. Currently, all three phases reference the same data, so you will now use inclusion lists to filter the data in a particular phase.

5   Change the phase colours by changing phase 6 to Red (colour 1) and phase 7 to Blue (colour 3).

Filtering the contents of a phase

1 To filter the furniture using an inclusion list, you will need to use the full Window Editor, so press F2.

You can use the asterisk as a wildcard character. * means match this single facet; ** means match the remainder of the object name. For full details of wildcards, see Using wildcards in Help.

2 In the Window Editor, select your first furniture phase (phase 5) and on the Phase tab, click Filter. From the Phase Filter Editor Action list select 'Exclude'. In the Wildcard/Schema box, precede the ** with **MGDS:FURN**. Then click New and ensure your Phase Filter Editor matches the illustration below:
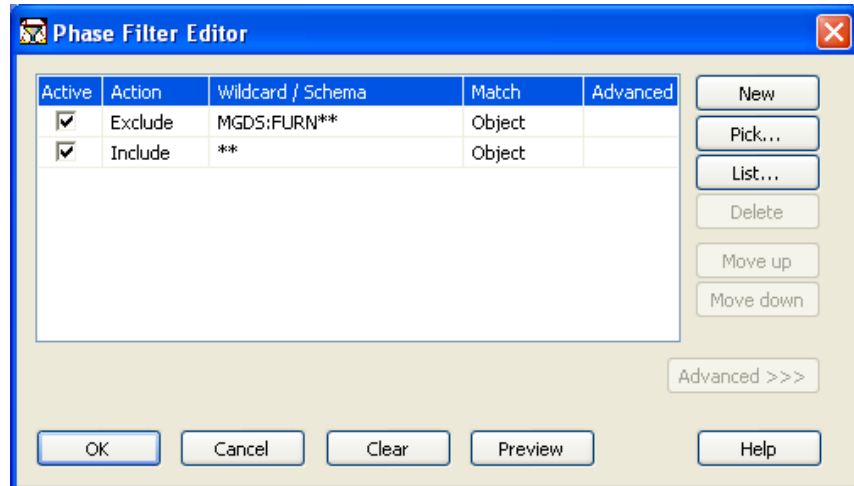
This will include all furniture **except** any furniture with object names starting with 'MGDS:FURN:'

3 Click OK.

4 Select your second furniture phase (phase 6) click Filter, and make sure the Action list shows Include, and then after ** type **:DINING.** Click OK.

This will include any furniture with object names ending with the facet 'DINING:' and exclude all other objects in this phase.

5 Select your third furniture phase (phase 7), click Filter. Leave the Action set to Include and after ** type **:EXTERNAL****

This will include any furniture with object names containing 'EXTERNAL' and exclude all other objects in this phase.

6 Using the Window Editor, edit the Phase labels to reflect the content of each phase.

The furniture data has now been filtered into three phases, which illustrates the different types of furniture in Flints Club House.

7 Close the Window Editor, and then save your window and layers.

6.2   Creating a new layer and duplicating its data

For more details, see Cloning layers in Help.

In MicroGDS you can copy a layer together with its data, so that you have a duplicate set of data. This is known as *cloning* in MicroGDS. This can be useful if you want to try various schemes, but you want to keep the original layer data unchanged.

In this section you will first copy a window definition and rename it. When you copy a window definition you are copying only the view onto the graphics, and not the actual graphics. So, at this stage, you have not created duplicate data.

You will then clone the external furniture layer, and the graphics it contains, so that you have a duplicate set of the external furniture. Finally to illustrate that the data has been duplicated, you will display both window definitions side-by-side and move the external furniture into a new layout.

Copying the Flints Club House window definition

1   On the Document Organizer, select the Flints Club House window definition, and then select Copy from the shortcut menu.

2   Select the Club House window files alias and choose Paste from the shortcut menu.
A copy of the Club House window definition is inserted. Remember, this is a duplicate view, not duplicate data.

3   Rename the copy of the window definition **External furniture scheme 2** and double-click it to open it.

Duplicating the data

1   Press F2 to open the Window Editor.

2   Select the furniture phase with the **:EXTERNAL** inclusion list, and on the Layer tab, click Clone Layer(s).

The Clone Layers dialog box is displayed.

3   Ensure that 'Change Existing phases to refer to cloned layers' is selected and click OK.

Note that phase 7 no longer has the same linked layer number as phases 5 and 6. This means that you have created a duplicate set of all furniture, but with only external furniture visible, because of the inclusion list filter.

4   To dismiss the Window Editor, click Close.

5   Close all window definitions except Flints Club House and External furniture scheme 2.

6   On the Window menu, click Tile Vertically.

7   Press F10 to select Object mode. Rearrange the external tables in the 'External furniture scheme 2' window definition. Note that they have not moved in the Flints Club House window definition as they are on a different layer.

8   Select and move a table and chairs in the restaurant and notice that they move in both windows.

9   Save and close the Flints Club House workspace.

6.3   Moving layers

In this section you will move layers from one alias to another. You will move the layers from the Import alias to the Site alias. The Import alias was a temporary alias used to import the DXF file in to. You will now move these layers into their permanent alias location (the Site alias).

Note that you can only move layers when they are not being referenced by a window definition. This means you must open the Flints Site workspace, and move the layers before opening the Site plan window definition.

1   Open the Flints Site workspace, but do not open any of the window definitions.

2   On the Document Organizer, click the Layers tab, and select all the layers in the Import Layer files alias.

3   Using the right mouse button, drag the layers from the Import Layer alias to the Site Layer alias.

     The layers are moved into the Site Layer files alias.

4   Close the project.

     When you move layers between layer aliases, the layers are immediately moved in the filing system. Therefore you do not need to save the project before you close it.

6.4   Setting style overrides

In MicroGDS you can set overrides for a phase to define the linestyle in which all lines are drawn, and the charstyle in which all text is drawn. Other overrides are also available but are not covered in this course.

In this section you will select a masked linestyle, copy a phase and use the masked linestyle as a style override. This will mask the paving slabs and prevent them from showing through the table and chairs.

1   Open the Flints Club House workspace.

2   Open the Flints Club House window definition.

3   Zoom in to the patio area on the left side of the window definition.

4   Display the Window Editor; the Furniture phase (phase 7) with the inclusion list **:EXTERNAL** should be at the bottom of the phase list.

Copying phases

1   To copy phase 7, select it and holding down CTRL, drag it to the bottom of the list.

You now have phase 8 with the same layer link number as phases 7, 6 and 5.

2   Your Window Editor and the table and chairs will look similar to this:
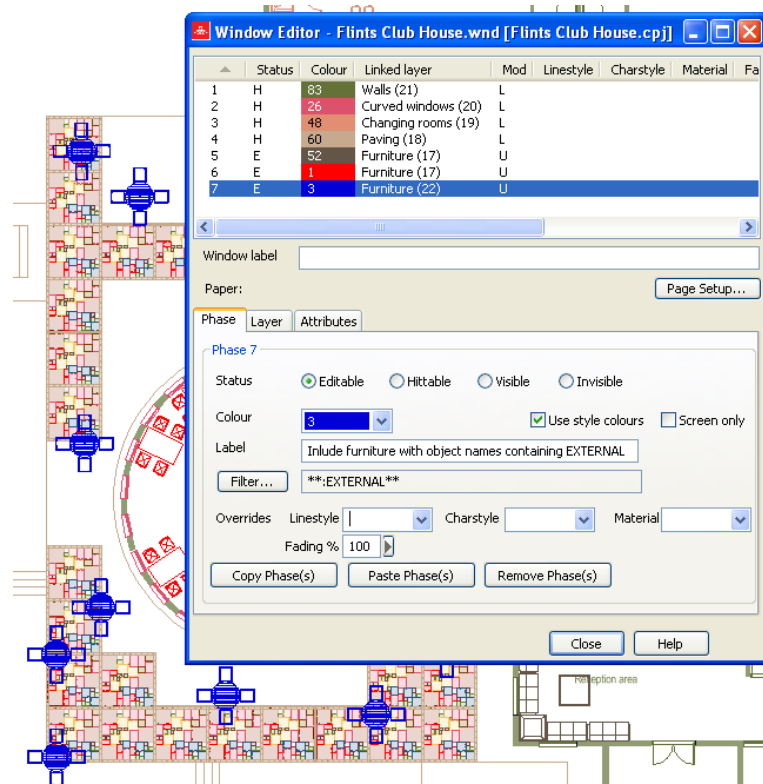
Using the Overriding linestyle

1   Select phase 7 with Filter **:EXTERNAL**

2   From the Linestyle Overrides list, select the MASK linestyle. (The Overrides Linestyle is two-thirds down the Window Editor.)

Your table and chairs now have a mask linestyle, and so the paving bricks are now obscured.

Your Window Editor and table and chairs will now look like this:
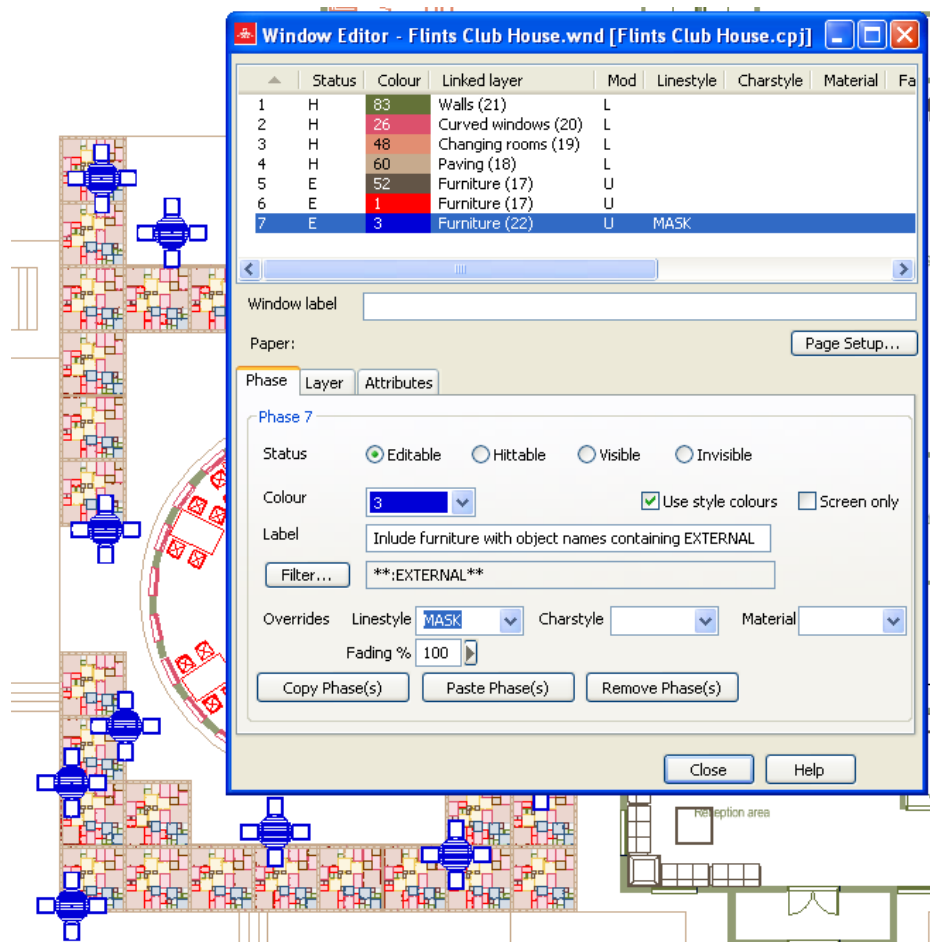
3   Close the Window Editor.

4   Save and close the Flints Club House window definition.

6.5   Copying phases and superimposing objects

In this section you will combine the data from the Club House and Site plan window definitions and save the data in a new window definition. You will then copy tables and chairs to an area around the pond and add a parasol to each table.

Creating a new window definition combining the Site and Club House data

1   Open the Flints Site workspace, and then open the Site plan window definition.

2   Open the Flints Club House workspace, and the Flints Club House window definition.

3   On the Window menu, click Tile Vertically.

4   Select the Site plan window definition and open the Window Editor.

5   Select all the phases, except the footprint phase, and drag them into the Club House window definition.

6   Close the Site plan window definition, and then maximize the Club House window definition.

        Notice that all the phases from the Site plan window definition are hittable. This is because you do not have direct access to the Site data via the Club House workspace.

7   Save the window definition as **Overall site plan**.

Copying the tables and chairs around the pond

1   Zoom in to an area around the Pond:
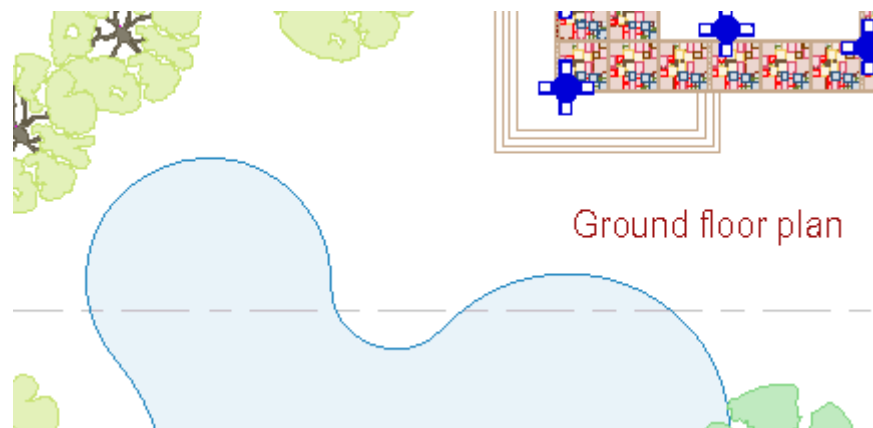
2 In object mode, select one of the external tables and holding down CTRL, place 4 copies around the pond as illustrated below:
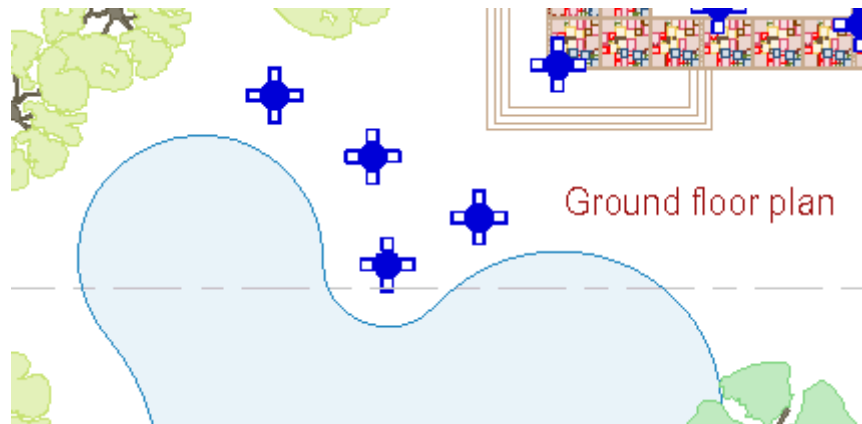
3 Zoom in to any one of the tables you have just placed.

Adding a parasol to one of the tables

1 On the Document Organizer, click the Library Files tab and expand the Furniture library file.

2 Now expand the Furniture layer to display the objects it contains.

3 Select the MGDS:FURN:EXTERNAL:PARASOL object and from the shortcut menu, select Insert Instance.

4 Position the mouse pointer over the top of the table, and use an I snapcode to place the parasol.

The parasol is placed, centred on the table:
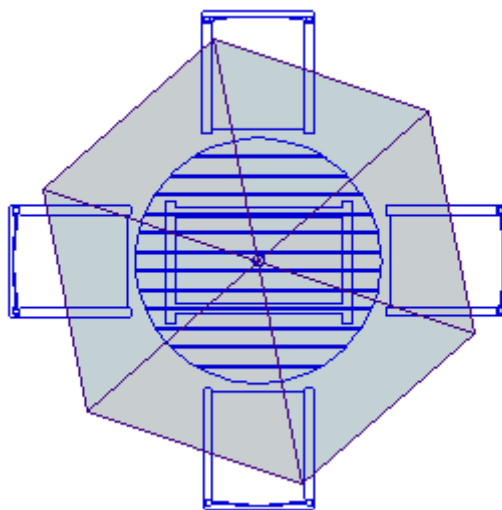
Copying the parasol to all the external tables

1 In the Mini Window Editor make phase 7 (the Furniture phase which includes the External furniture) editable. Make all other phases hittable. Remember you can use the Invert Selection command.

2 On My toolbar, click Axes Reset, and click onto the centre of the parasol.

3 Select the parasol in Object mode (F10), and cut the parasol to the Clipboard. (Make sure only the parasol is selected.)

4 Zoom out to the area illustrated below.

5 On the Edit menu, click Select All (F7) (only the external tables and chairs are selected).

6 On the Object menu, click Superimpose.

The parasol has now been added to each of the external tables and chairs.

Ground floor plan
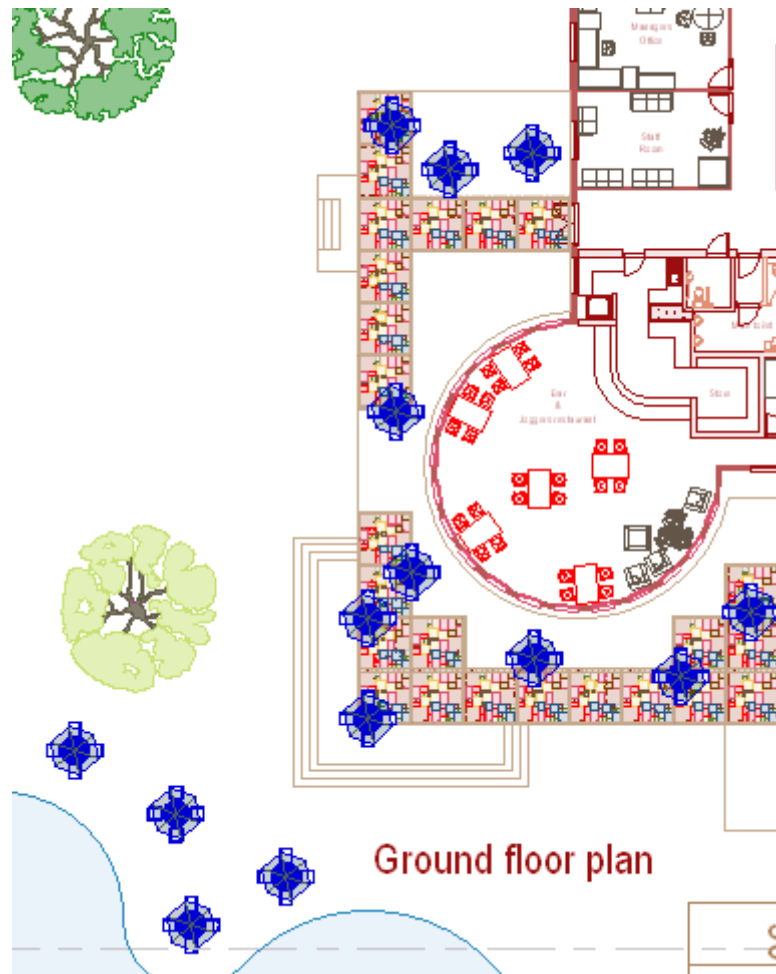
7 Save both your project workspaces.

Exercise 7: Superimposing objects

In this exercise you will copy a dining chair to the end of one of the tables in the restaurant, and then superimpose the chair on to all the tables in the dining area.

1   In the Flints Club House workspace, check that you have the Overall site plan window definition open.

2   Zoom in to Bar & Joggers restaurant.

3   Make phase 6 (the phase which includes the dining furniture) editable, and make all other phases hittable.

4   On the Document Organizer Library tab, expand Furniture.MAN. Select the MGDS:FURN:CHAIR:DINING object and from your shortcut menu, select Insert Instance.

5   Place the chair down with an I snap at the table illustrated.
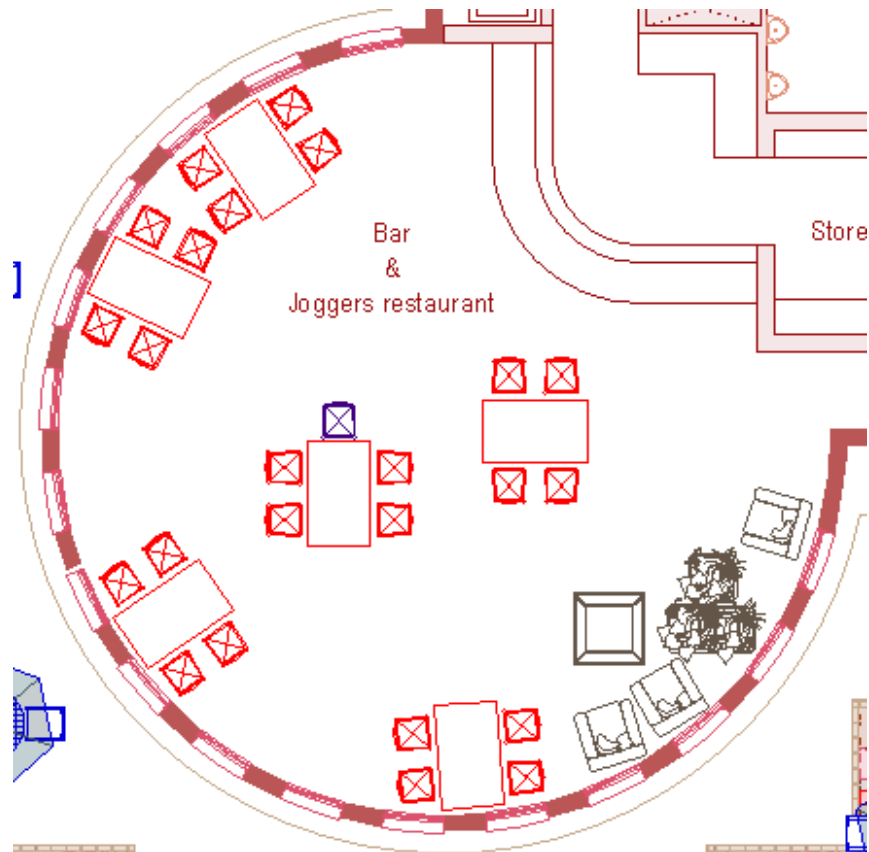
6   On My toolbar, click Axes Reset and click on the table.

Note that the Angle in the status bar changes to 90 degrees as this is the object axes of the dining table.

7   In object mode (F10), cut the chair to the Clipboard.

8   Select all six tables.

9 On the Object menu, click Superimpose.

The chair is copied to the other tables as illustrated below:

10 On the status toolbar, reset the Angle back to 0.
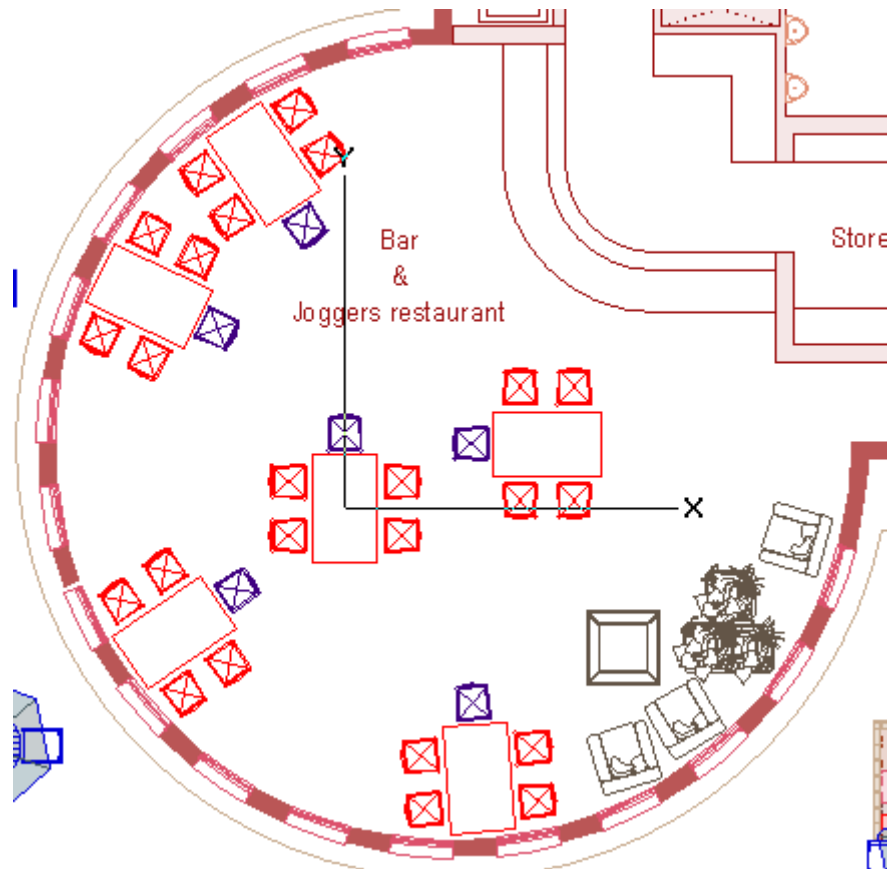
11 Save the Club House workspace, and then close both project workspaces.

7. Creating symbols, linestyles, and character styles

The graphics and text that you produce on the screen are exactly what you get when you plot or print your drawing. Using MicroGDS, you can enhance the look of a drawing in a number of ways including varying the thickness of lines, and including symbols within lines to denote particular requirements. You can also make use of colour with filled linestyles, and create fills with symbols to mark out areas of interest on your plans. Furthermore, you can create your own typeface (or font) to use when you add text to your drawing.

In this section you will learn how to create your own font and use it to annotate your drawing. You will also create a number of linestyles including filled linestyles, using both symbols and raster images.

7.1   Creating fonts

In this next section you are going to modify some predefined characters and use them in a text block.

To save time, an alphabet has been partially created for you.

- Open My text.MAN from the Advanced training data folder.
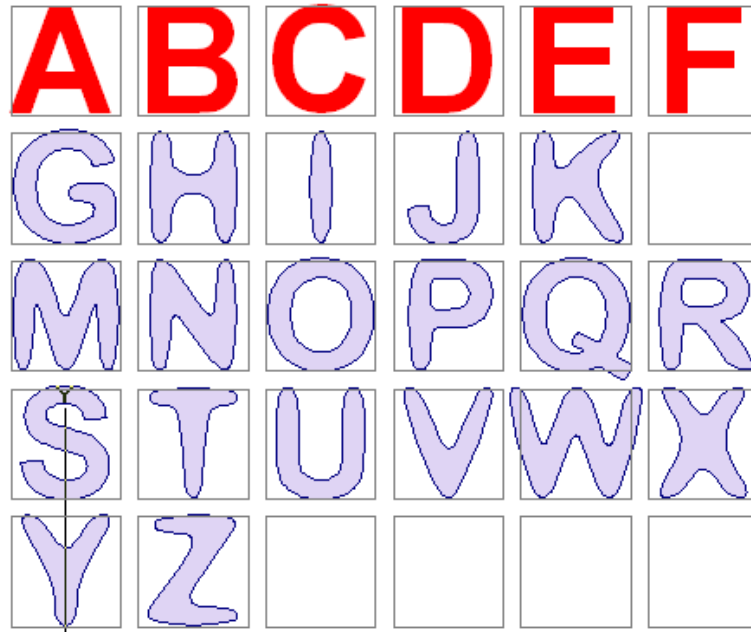
You will notice that the letters A to F are different to the rest of the alphabet, and that the letter L is missing. You will first create the letter L using an existing font, and then edit it (together with letters A to F) to match the other letters.

For MicroGDS to recognize a text or symbol character, you must give it an appropriate name. The last facet of this name must be the valid Unicode or ASCII character specification that for that particular character.

For a full list of ASCII codes, see Decimal ASCII codes in Help.

Creating the character 'L'

1   On the Object menu, click New.

2   In the New Object dialog box change the name offered to **text:76**, (76 is the ASCII code for L), and place the hook point at the bottom left of the empty grid box.

3   From the current charstyle list on My toolbar, select ARIAL94.

4   Click Construct Text. In the New Text dialog box type **L** and select the middle justification button. Place your letter in the empty grid box with an Inside snap.

To modify the shape of your text, you need to convert the existing letters A to F and L from text to line primitives.

Converting text to line primitives

1 On the Mini Window Editor, set the Construction lines phase to Visible.

This will enable you to select your letters easily without inadvertently selecting the construction lines.

2 Select the first letter to convert, using a Box snap as illustrated, and then from your flyout toolbar, select Alter Text Burn In.

3 You can repeat the last MicroGDS command using ENTER. So select the next object and press ENTER. Then repeat for each letter to convert, ensuring that you select only one object at a time. Otherwise MicroGDS would combine the objects into one single object

You will now change the style of the letters to match the rest of the alphabet. To speed up the selection of the letters, you will use the Fence command.

Matching your characters to the rest of the alphabet

1 Press F10, object mode, and select each of the letters.

2 On the Alter menu, click Smooth, Midpoints.

3 With each letter still selected, from the Line list on the status toolbar, select Fill30%143T.

Your finished alphabet will look as shown:
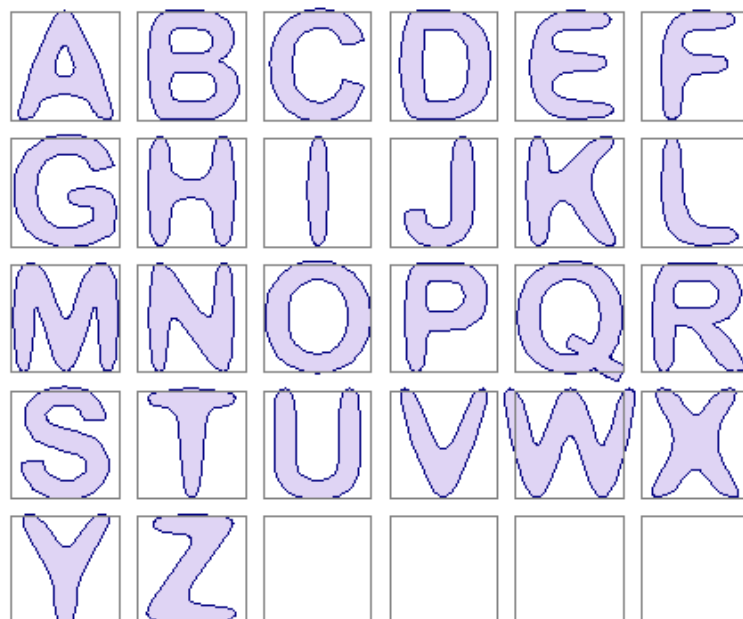
You have created the graphics for the capital letters of a new font. To enable MicroGDS to recognize font graphics you need to save the file as a CV7 file.

4   Save the MAN file as **My new font.CV7** in *drive*:\Advanced training data\Company Styles.

5   Close the CV7 file.

7.2   Using your new font

In this section you will use the font you created in the previous section in a new charstyle.

1   Open the Flints Site workspace, expand the Parking & Landscaping window definition and open the Building footprint view.

2   Double-click the Footprint phase to make it current and editable, and create a new object called Text:

3   Place the hook point in the middle of the building footprint, using an Inside snap.

You will now define a new charstyle based on your My new font.CV7 file.

4   From your flyout toolbar, select Charstyle Modify and from the Font box, select the MicroGDS button. From the MicroGDS Font dialog box, select My new font and click OK. In the Height box, type **10000** and save your charstyle as **My text**.

5   Using the Construct Text command, place the word **FLINTS** as illustrated below.

Note that you have to use uppercase characters as these are the only set you created. Any lowercase characters you use will display as DEFAULT style.
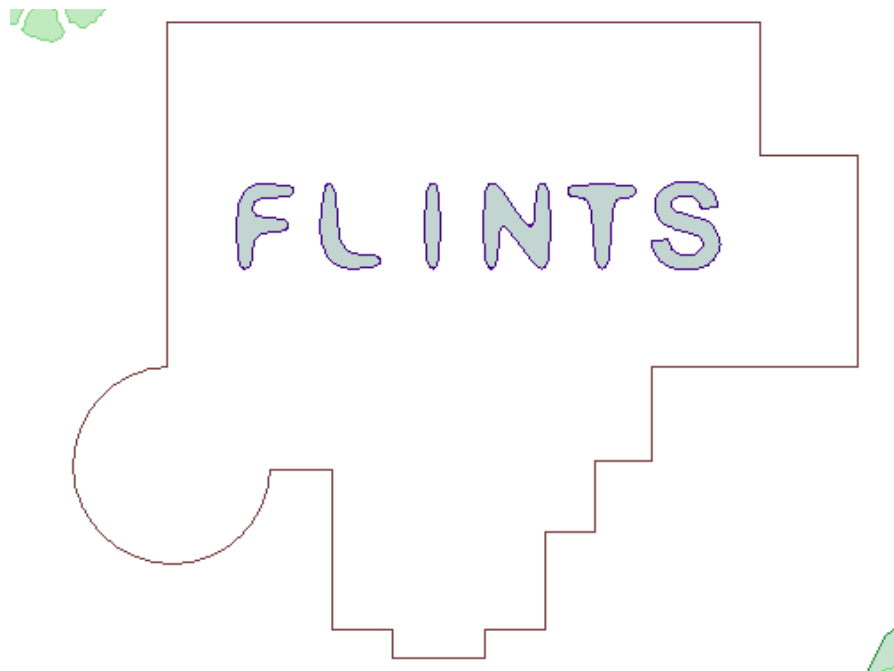
6   Save and close your window definition.

7.3   Creating a linestyle using a symbol

For more details, see Creating
and modifying styles in Help.

In MicroGDS you can incorporate MicroGDS fonts and symbols in a
linestyle. This is useful, for example, on architectural plans where you
may want to use patterned filled linestyles for paved areas, roof tiling,
brick coursing, etc.

You are going to create a filled linestyle, using a conifer tree symbol, to
denote a field used for Christmas tree farming.

Creating a CV7 file

1   Open the file *drive:*\Advanced training data\Tree Symbols. Man.
     This file contains two symbols representing trees:
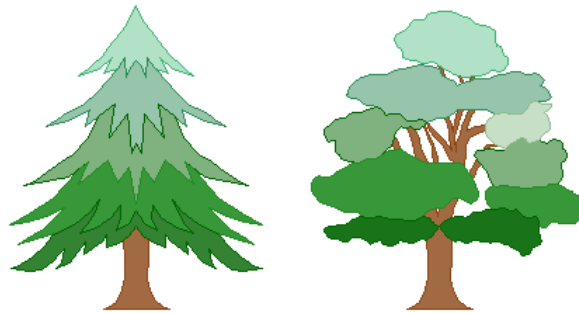
2   In object mode, hover over each object and check that the last facet
     of each object is a number.

3   Save the file as **My symbols.CV7** in your Company Styles folder,
     and then close the file.

Preparing your graphics

1   Open the Site plan window definition in Flints Site workspace.

2   Click on to the land boundary as shown:

Click here
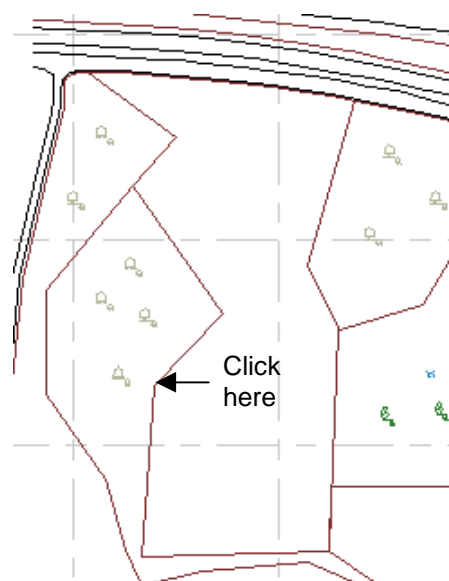
Creating a filled linestyle using a tree symbol

1   On the Status toolbar, ensure that your units are set to mm.

2   Open the Linestyle dialog box.

3   For the Stroke type, select Fill.

4   For Fill type, select Symbol.

5   From the Font list, select My symbols and in the Symbol box select
the symbol representing a conifer tree (Symbol 1).

The tree symbol was originally created at a scale of 1:1 and is
approximately one metre high. Your fill area in the site plan is
covering a very large area, (approximately 19000 square metres). A
one metre tree will be so small that you will not be able to see it on
the drawing. The symbol therefore needs to be scaled. For this
example you will scale the tree 5 times.

6   Type **5** in the Scale box. This will make the tree 5 metres high.

You now need to set the spacing around each tree symbol. For this,
use the Grid section of the linestyle dialog box.

7   To set the vertical gap, type **20000** in the Gap box, and to set the
horizontal spacing, type **20000** in the Spacing box.

Your Linestyle dialog box should now look like this:
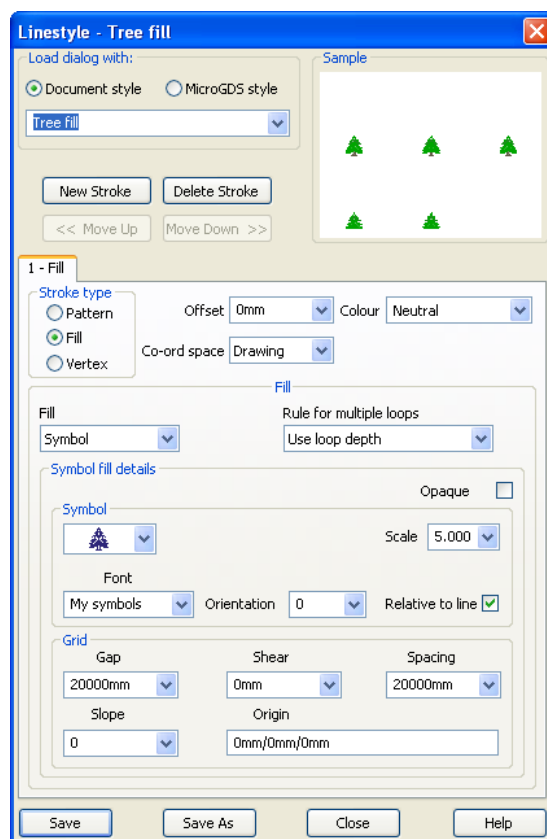
Creating a thin boundary line

1   Click the New Stroke button and then, for the Stroke type, select Pattern.

2   Click Save As, and name your linestyle **Tree fill**.

The selected land parcel adopts the Tree fill linestyle as illustrated below:
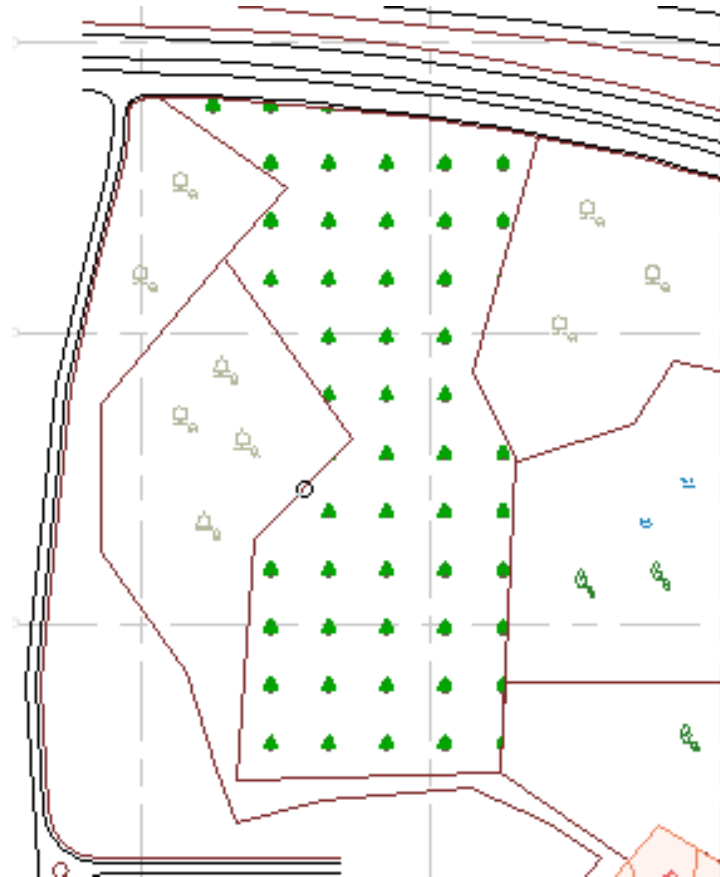
3   Close the Linestyle dialog box.

7.4   Creating a linestyle with a raster image

You can also use a raster image in a linestyle. To illustrate this, you will show paving around the Club House.

Creating a filled linestyle using a raster image

1   Open Flints Club House workspace and open the External furniture scheme 2 window definition.

2   Open the Linestyle dialog box.

3   For the Stroke type, select Fill.

4   For Fill type, select Raster.

5   To enter the file name, click Browse and select *drive*:\Advanced training data\Raster files\Mpv0732.bmp. Click Open.

6   In the Height box, type 1600. The raster tile is square and because the Preserve aspect ratio check box is selected, the Width is updated to 1600 accordingly.

7   Save the linestyle as **Paving**.
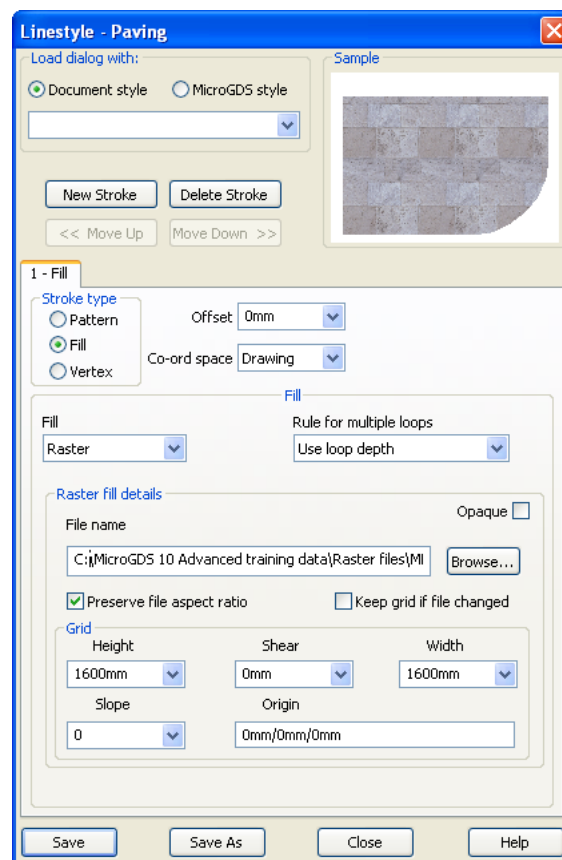
8   Close the Linestyle dialog box.

Using your filled linestyle

1   In the Mini Window Editor, make the Paving phase editable and current.

2   In object mode, click on the unpaved area (called Patio Footprint) around the restaurant as illustrated below:

Ground floor plan

click here
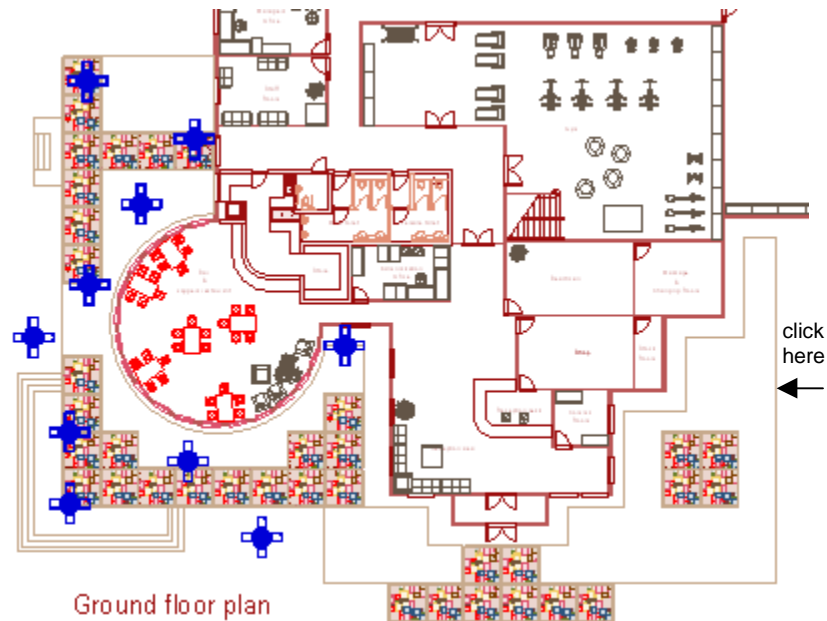
3   On the status toolbar, change the linestyle to Paving.

The area is filled with paving as illustrated:

Ground floor plan
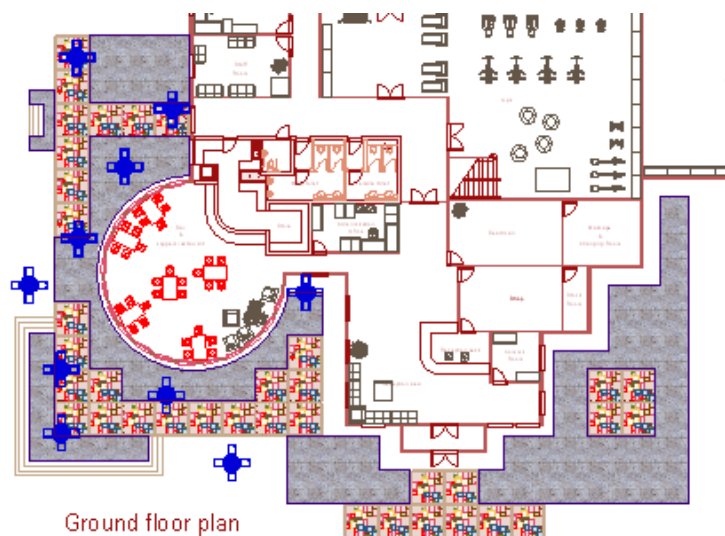
4   Save and close your Flints Club House workspace.

7.5   Creating a multi-stroke linestyle

You will now create a dashed linestyle that will be used as a boundary line. The dashed line will be constructed using three strokes:
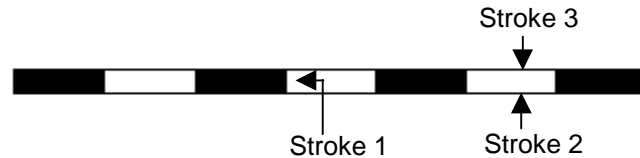
Preparing your data

- From the Document Organizer list, select Flints Site workspace, and open the Site plan window definition.

Creating the first stroke

The first stroke is a dashed line, 1mm thick.

1   Open the Linestyle dialog box.

2   From the Document style list, select DEFAULT.

3   Complete the dialog box as follows:
- Stroke type: Pattern
- Offset: 0.500
- Co-ord space: Output
  Output space means that your linestyle graphics will be a fixed visual size on screen and on printed paper. For example, if a stroke uses a 5mm dash, it will always measure 5mm whether you zoom in or out.
- Thickness: 1.000
  The physical thickness of the line.
- Phasing: Line
  Line phasing means that the start of the End pattern corresponds with the end of a Middle pattern repetition. Variable components are stretched as necessary.

You define the pattern in three parts: the start and end parts are drawn once, at the start and end of the line. The middle part is repeated along the length of the line. If necessary, the middle is stretched to fit the line with a whole number of repetitions.

The following components are available:

	fixed length line
	fixed length space
	Symbol
	variable length line (Middle only)

For more information on Co-ord space, see Help.

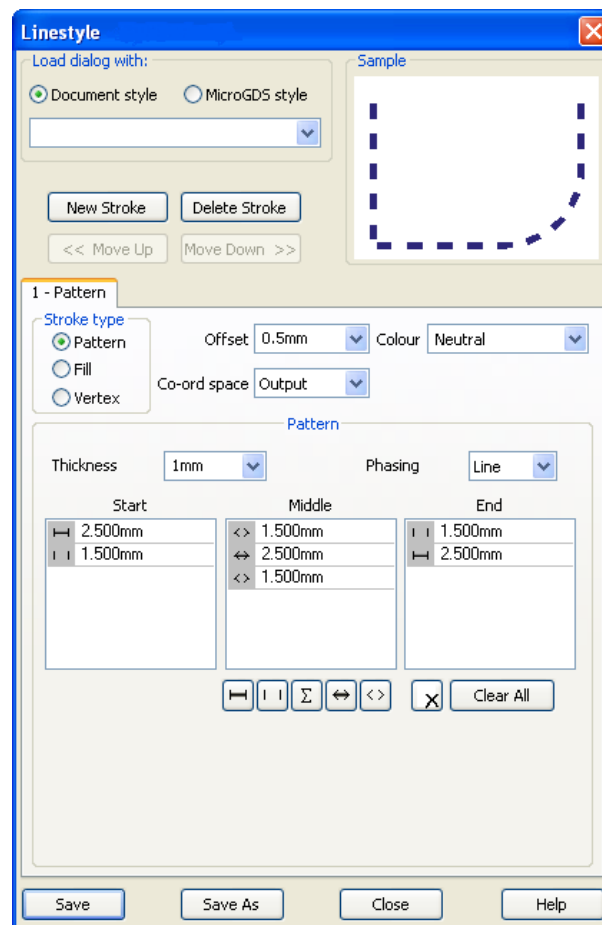For more information on Phasing, see Help.

⟨ ⟩   variable length space (Middle only)

Lines and spaces of variable lengths are called *elastic* components. You can specify the length for elastic components, but they can be stretched to fit the line if necessary.

4   Complete the Pattern section of the dialog box as follows:

- drag ▭ into the Start pane

You delete components by dragging them out of the pane.

- drag ▯ ▯ into the Start pane, double-click the component, type 1.5 and click ✔

- drag ⟨ ⟩ into the Middle pane, double-click the component, type 1.5 and click ✔

- drag ⬌ into the Middle pane

- drag ⟨ ⟩ into the Middle pane, double-click the component, type 1.5 and click ✔

- drag ▯ ▯ into the End pane, double-click the component, type 1.5 and click ✔

- drag ▭ into the End pane

Linestyle

Load dialog with:
- ⦿ Document style   ○ MicroGDS style

Sample

[New Stroke] [Delete Stroke]
[<< Move Up] [Move Down >>]

1 - Pattern

Stroke type
- ⦿ Pattern
- ○ Fill
- ○ Vertex

Offset 0.5mm   Colour Neutral

Co-ord space Output

Pattern

Thickness 1mm   Phasing Line

Start	Middle	End
▭ 2.500mm	⟨⟩ 1.500mm	▯▯ 1.500mm
▯▯ 1.500mm	⬌ 2.500mm	▭ 2.500mm
	⟨⟩ 1.500mm	

[▭] [▯▯] [Σ] [⬌] [⟨⟩]   [✗] [Clear All]

[Save] [Save As] [Close] [Help]

Creating the second stroke

The second stroke is a continuous line.

1   On the Linestyle dialog box, click New Stroke and complete the
       dialog box as follows:
- Stroke type: Pattern
- Offset:0
- Co-ord space: Output
- Thickness: 0
- Phasing: Line
- Pattern: To clear the Start, Middle, and End panes click Clear All
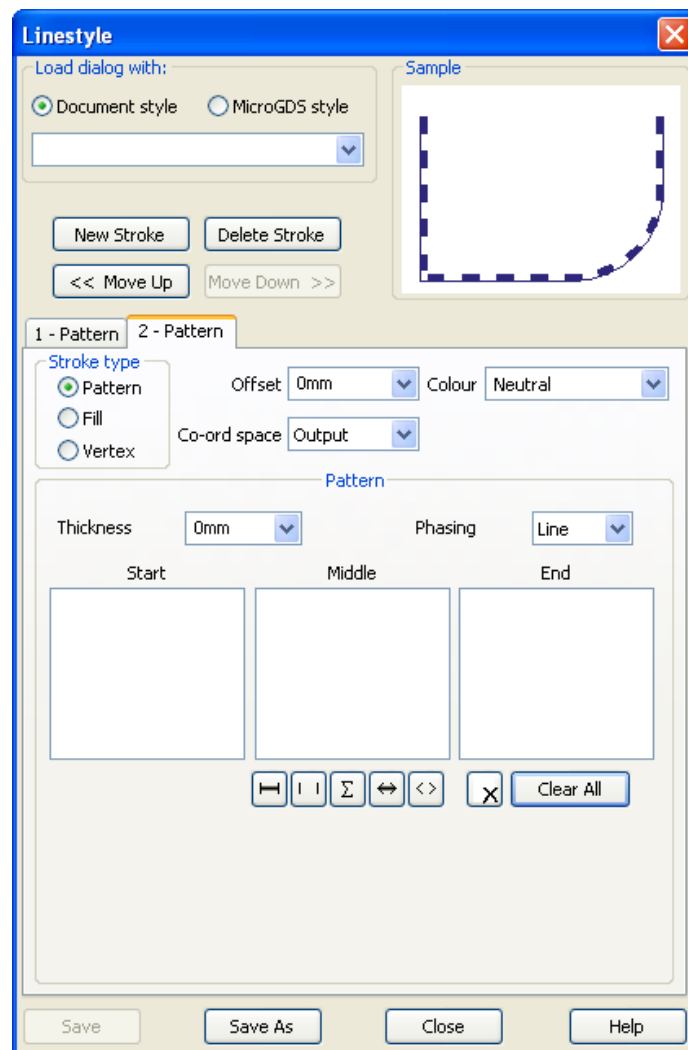
Creating the third stroke

The third stroke is a continuous line the same as the second stroke, but is offset from the first line by one millimetre.

1   Click New Stroke
- Stroke type: Pattern
- Offset: 1.000
- Co-ord space: Output
- Phasing: Line
- Thickness: 0
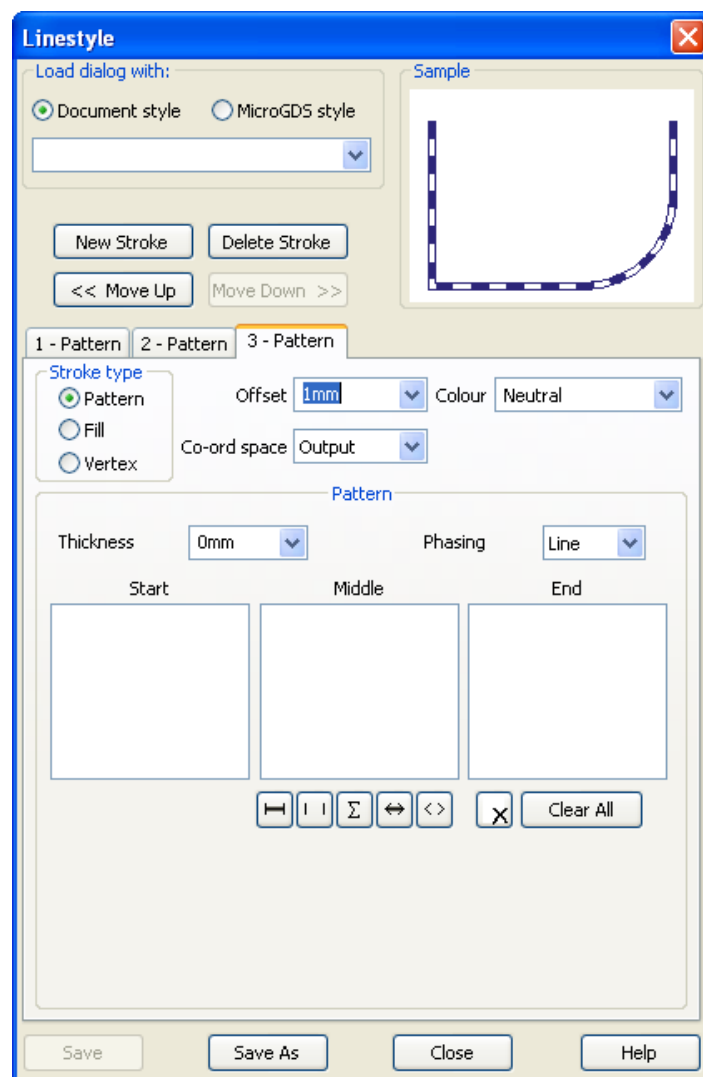
2   Save your linestyle as **Border**, and close the Linestyle dialog box.

7.6   Using your multi-stroke linestyle

1   Make the General line phase the current editable phase.

2   Select the General line as illustrated below.

3   From the Line list on the status toolbar, select Border.

4   The line is changed as illustrated below:
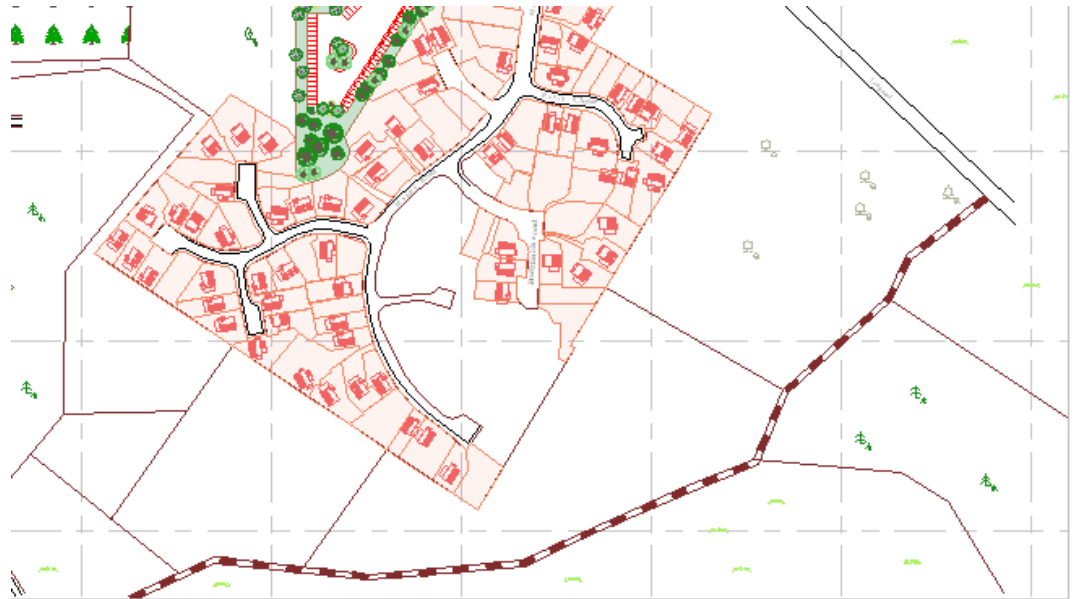
5   Save the project.

7.7   Exercise 8: Creating linestyles

1   Create a new window definition and name it **Graphics**.

2   From the View Parameters window, set the view extent to 5000/5000, -5000/-5000 and click Apply.

3   On the View menu, click Save View1.

4   Create the following patterned linestyle. (The linestyle definition is given on the following page.)
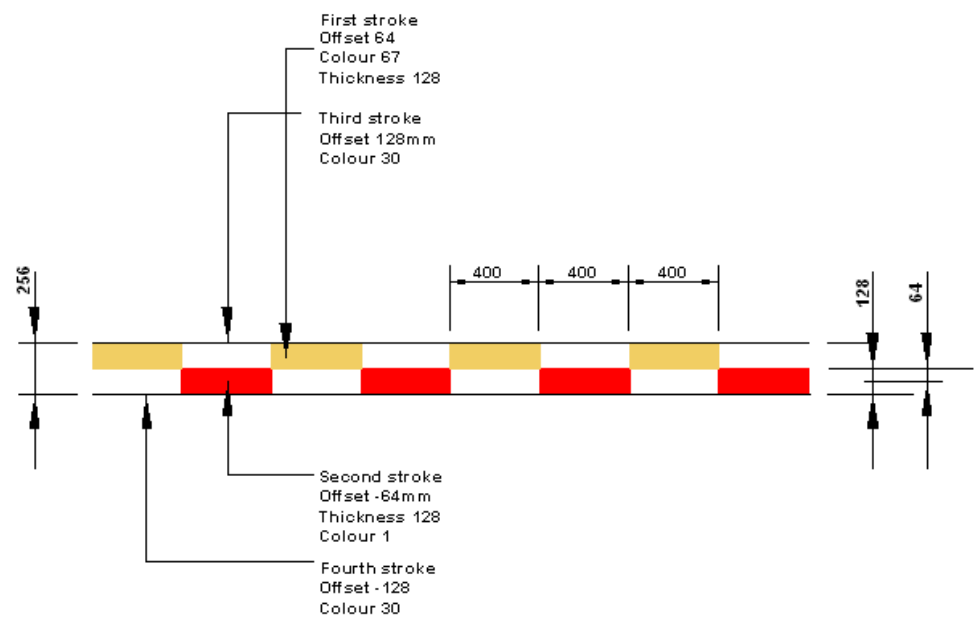
5   Save the linestyle as **Border,** and draw a rectangle as illustrated:
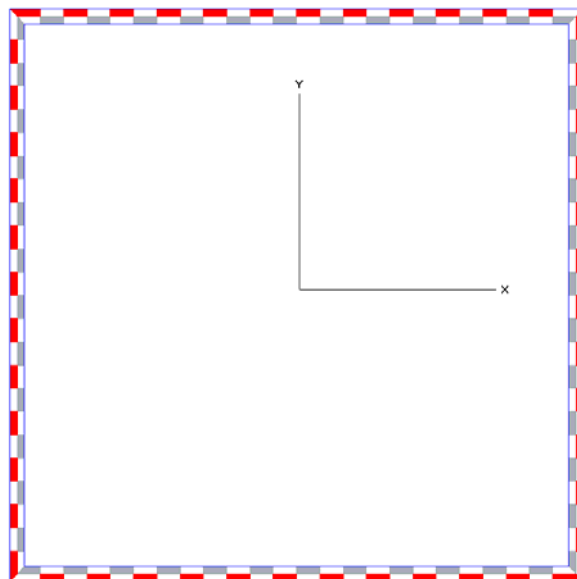
6   Delete your graphics but keep your window open for the next section.

Solution to Patterned linestyle

First stroke:

- Stroke type   Pattern
- Offset   64
- Colour   67
- Co-ord space   Drawing
- Thickness   128
- Phasing   Angle
- Middle pattern pane:
  - Elastic line   400
  - Elastic space   400
  - Elastic line   400
  - Elastic space   400

Second Stroke:

- Stroke type   Pattern
- Offset   -64
- Colour   1
- Co-ord space   Drawing
- Thickness   128
- Phasing   Angle
- Middle pattern pane:
  - Elastic space   400
  - Elastic line   400
  - Elastic space   400
  - Elastic line   400

Third Stroke:

- Stroke type   Pattern
- Offset   128
- Colour   30
- Co-ord space   Drawing
- Thickness   0
- Phasing   Line

Fourth stroke:

- Stroke type   Pattern
- Offset   -128
- Colour   30
- Co-ord space   Drawing
- Thickness   0
- Phasing   Line

Note: Remember to clear all pattern components from the third stroke as they are automatically inherited from the previous stroke.

8. Overlapping closed line primitives

In MicroGDS you can choose how to fill multiple, overlapping closed line primitives. You can specify that 'holes' are created where primitives overlap, or that these areas should be filled in. This applies only to primitives in the same object, linestyle and colour.

1   In the window definition used in the last exercise, delete your graphics if you have not already done so.

2   From the Line list on the status bar, select DEFAULT.

3   Using the Rule X and Rule Y commands create a grid 500 r 5.

4   On the Object menu, click Insert. Go to the MicroGDS Generic library and from furniture.man, select MGDS:FURN:SIMPLE:SINGLE BED. Click Insert instance, and place it on top of your grid.

5   Open the linestyle dialog box, and set up the linestyle properties as shown below. To set your colour to white, from the Colour list choose Select Colour. Click the True Colour tab, and type 255 in each of the R, G, B, and A boxes, and then click OK.
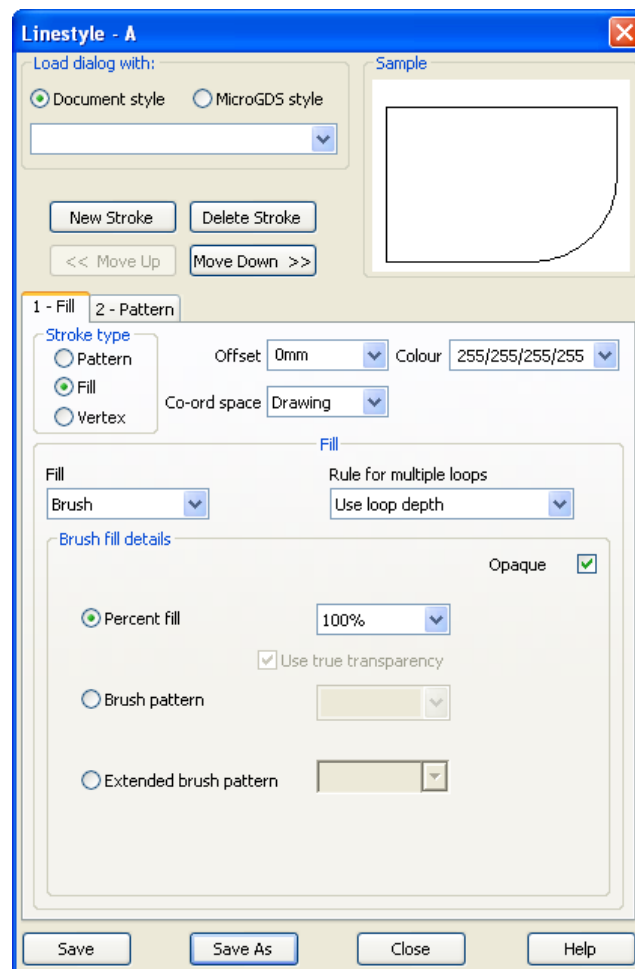
6   Ensure you have Opaque selected and click Save.

Note that on the bed the closed line primitive representing the pillow is a 'hole' and you can see the underlying grid as illustrated below:
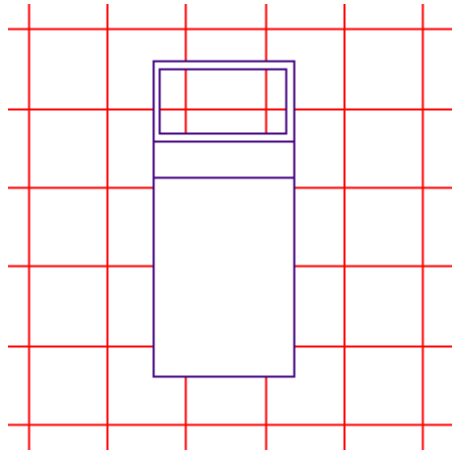
7   On the linestyle dialog box, from the Rules for multiple loops, select Use loop sense, and click Save.

The graphics for the bed are changed as illustrated below:
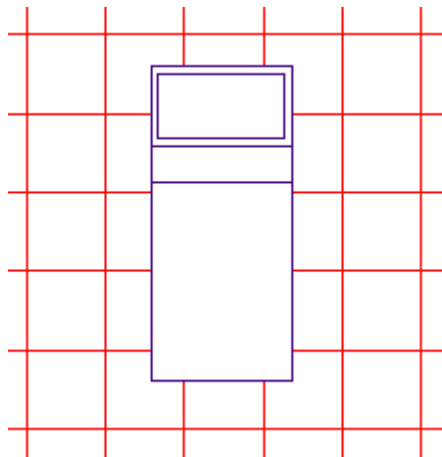
The pillow is no longer a 'hole' as with 'Use loop sense' overlapping primitives that are drawn in the same direction are simply overlaid.

Note that holes can be created with 'Use Loop sense' if overlapping primitives are drawn in opposite directions.

9. Attaching alphanumeric text to graphics

Sometimes, you might want to include additional information with a specific item that cannot be graphically represented. Using a plan view of a door as an example, you cannot see the height of the door, or whether the door has a fan light or a vision panel, its colour, the manufacturer's details and so on. Attribute data provides a method of attaching non-graphical data to your graphics. When you have attached attribute data, you can create reports and schedules using the attached data.

In MicroGDS you can also assign attribute data at window definition level, layer level and primitive level.

In this section you will attach attribute data reporting the manufacturer, the maintenance date, the asset manager, the asset manager's telephone number, and the cost of the equipment in the gym.

Next, you will create schemas which define the layers and objects the mnemonics are to be used with.

You will then use attribute data in a phase inclusion list to filter the maintenance dates of the Treadmills.

Finally you will create an object format definition file and use it to create an object schedule.

9.1   Setting up your window definition

In this section you will prepare your graphics before creating and assigning attribute data.

To enable you to access the data quickly you will create a new window definition displaying a zoomed in extent of the Club House gymnasium, and remove all unwanted phases.

1   Open Flints Club House workspace, and the Flints Club House window definition.

2   Zoom in to the Gym area and press F12 (Save View).

3   Save the window as **Gym**.

4   Press F2 to open the Window Editor and delete all phases except Walls, and Furniture with the inclusion list NOT MGDS:FURN:**

Your Gym window definition should now look as illustrated below:
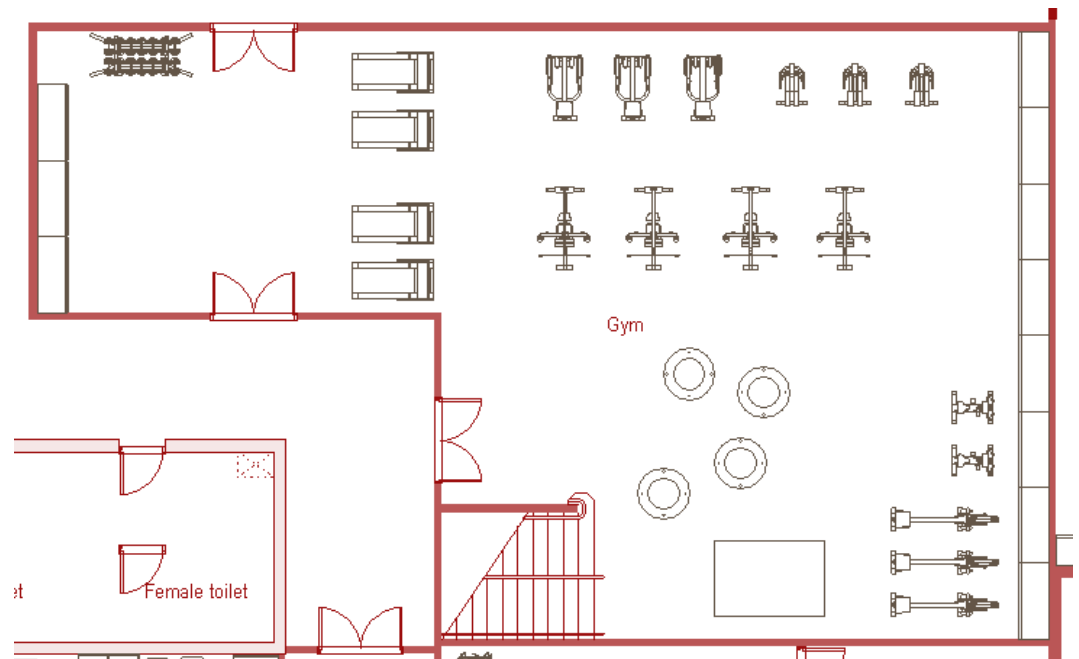
9.2   Creating mnemonic definitions

To define the behaviour of attribute data when assigning information to a graphic, you must set a mnemonic definition. A mnemonic definition has the following properties:

Applicability
There are five applicability levels you can apply attribute data to in MicroGDS. In this course we cover three - Reference, Object, and Layer:

- Reference level: applies the information to the selected object only
  For example, imagine the treadmills in the gymnasium were purchased at different times and you wanted to track their maintenance dates. The dates would vary for each treadmill, so you would need to attach a maintenance date to each individual treadmill.

- Object: applies the information to all objects of the same name
  For example, imagine you wanted to know the name and address of the company who manufactures the treadmill. In this example only one company manufactures treadmills, so you could assign this data to one treadmill and all the other treadmills (with the same object name) will adopt the same data.

- Layer: applies the information to all objects on the same layer
  For example, imagine you wanted to know the telephone number of the person responsible for the upkeep of all the furniture, including the gymnasium equipment. As all the furniture in the Club House is on one layer, you need only assign the data to one piece of furniture; all the other furniture will inherit the same data.

Attribute data type
The following types of attribute data can be attached to objects:
- Text: this is free text, such as a name or an address
- Enumeration: you select from a list of pre-defined words
- Double: use double precision when the data is numerical and requires up to ten significant digits in total
- Single: use single precision when the data is numerical and requires up to six significant digits in total
- Integer: use this when you want to set a range for a whole number
- Area, Length, Volume: for a number in the specified units
- Date: for a date in a specified format
- URL: for a uniform resource locator or a file name

There also are computed mnemonics which perform different calculations and external mnemonics to use data from an external database. For details of computed mnemonics see Help.
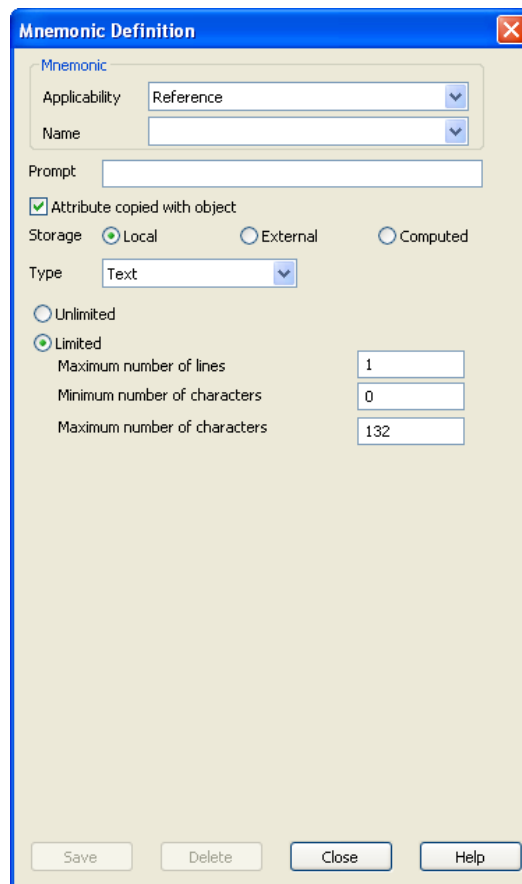
To illustrate attribute data and how the different types of mnemonic definition control the way data is applied, you will set up mnemonic definitions and apply data as follows:

- the manufacturer of the gym equipment
- the asset manager of the furniture
- the asset manager's telephone number
- the cost of the treadmills

Defining the manufacturer of the gym equipment

1   On the Document Organizer, click the Styles tab and then click [icon]
(the New Mnemonic toolbar button).

The Mnemonic Definition dialog box is displayed:

Mnemonic Definition

Mnemonic

Applicability	Reference
Name	

Prompt

☑ Attribute copied with object

Storage   ● Local   ○ External   ○ Computed

Type   Text

○ Unlimited

● Limited

Maximum number of lines	1
Minimum number of characters	0
Maximum number of characters	132

| Save | Delete | Close | Help |

2   From the Applicability list, select Object.
This means all objects with the same name will be assigned the same manufacturer.

For more information, see The Mnemonic Definition dialog box in Help.

3   To define the name for the mnemonic for the manufacturer of the gym equipment, type **Manufacturer** in the Name box.

4   In the Prompt box type the description **Manufacturer of the gym equipment**. This is used for the title of the Edit Attribute Data dialog box, when you add or edit the attribute data associated with the mnemonic.

5   From the Storage options, select **Local**.

You are now going to define the definition for the name and address of the manufacturer.

6   From the Type list, select Text.

7   Select the Limited option.

8   In the Maximum number of lines box type **4**. Leave the Minimum
         number of characters as 0 and the Maximum number of characters
         as 132.

         This provides four lines for the manufacturer's details, up to a total of
         132 characters.

9   To save the mnemonic definition, click Save and then click Close.
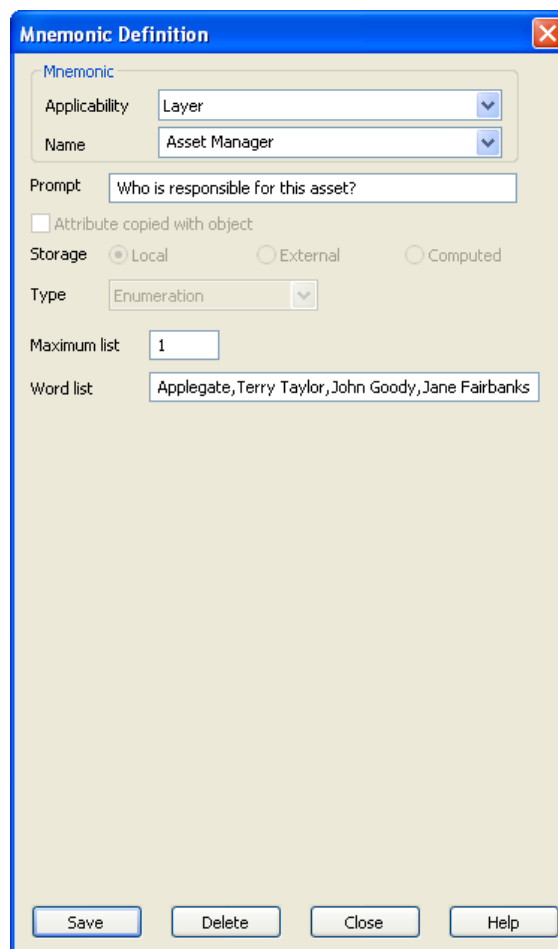
Viewing the details for the manufacturer of the gym equipment mnemonic definition

1   On the Document Organizer Styles tab, click Preview, then open the
         Mnemonics folder and the …\Styles file, and then click on
         Manufacturer:
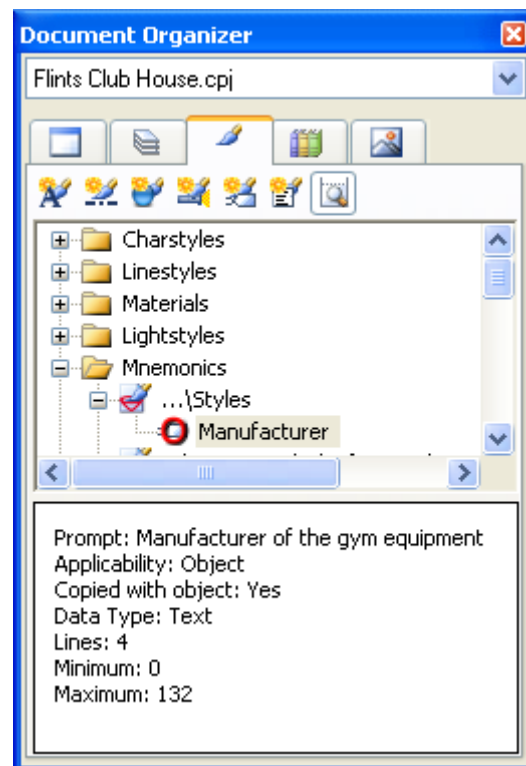
Defining the asset manager of the furniture

1   To define the asset manager of the furniture, on the Document Organizer Styles tab, click the New Mnemonic toolbar button.

2   All the furniture, including the gym equipment, is on one layer, therefore the name of the asset manager can be set at Layer level; so select Layer from the Applicability list.

3   To define the name for the mnemonic, type **Asset Manager**.

4   In the prompt box, type **Who is responsible for this asset?**

5   Ensure the Local option is selected.

6   In this example, the asset manager is one person from four candidates. To enable the asset manager to be chosen from a list, select the Enumeration option and type **1** in the Maximum list box.

7   In the Word list box type, **Jenny Applegate,Terry Taylor,John Goody,Jane Fairbanks.** Note that the comma denotes the start of a new entry.

8   Click Save, then click Close.

Defining the asset manager's telephone number

1 The asset manager's telephone extension number can also be set at
Layer level, so select Layer from the Applicability list.

2 To define the name for the mnemonic, type **Asset Manager's
extension number**.

3 In the prompt box, type **What is the Asset Manager's extension
number?**

4 Ensure the Local option is selected.

5 The extension number will be a whole number so select Integer from
the Type list, and type **1** in the Maximum list box.

6 The extension numbers range from 200 to 300, so in the Minimum
box type **200**, and in the Maximum box type **300**.

7 Click Save, then click Close.

Defining the cost of the gym equipment

1   The cost of the gym equipment will apply to individual objects of the same name, so select Object from the Applicability list.

2   In the Name box, type **Cost**.

3   In the Prompt box, type **How much does this equipment cost?**

4   Select the Attribute copied with object check box.

5   From the Type list, select Single, and in the Maximum list box, type **1**

6   In the Leading digits box type **4** and in the Trailing digits box type **2**

This means that you can assign 4 digits before the decimal point and two after, for example, 7500.00

7   Select the Show trailing zeros check box.

8   Click Save, and then click Close.

9.3   Setting up the Schemas

Now that you have created your mnemonic definitions, you can create schemas to specify which layers and objects the mnemonics are to be used with. Then, when you select a primitive or object to which a schema applies, the appropriate mnemonics are available ready for you to assign a value.

There are three types of schema definitions: Layer, Object, and Window. The type is used to restrict the type of graphics to which a schema applies.

Creating the Cost and Manufacturer schema definition

1   On the Styles tab of the Document Organizer, click (New Schema toolbar button).

The Define Schema dialog box is displayed:
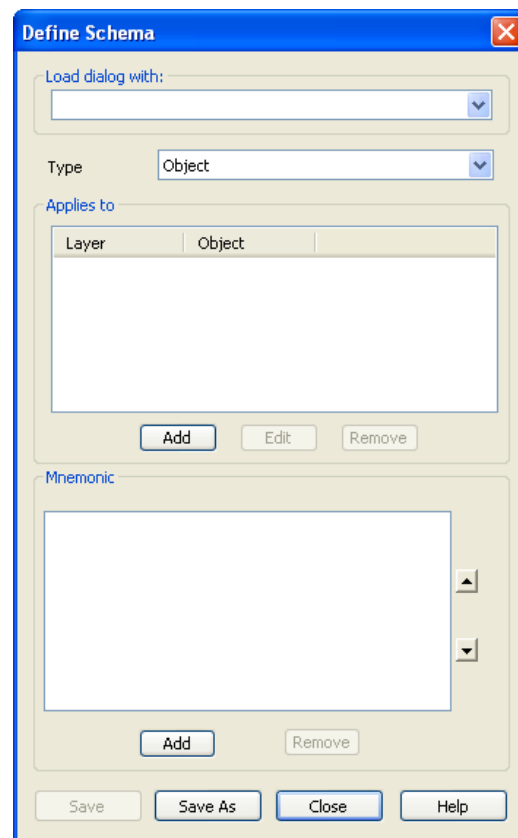
2   From the Type list, ensure that Object is selected.

3   To specify the objects to which the schema is to apply, under the Applies to box, click Add.

4   In the Object filter box, type **Gym:**** and click OK.

This will apply the schema to all gym equipment whose object names start with Gym.

5 To specify the mnemonics that are to be available to the corresponding objects, under the Mnemonic box, click Add.

6 The Schema Mnemonic dialog box is displayed:
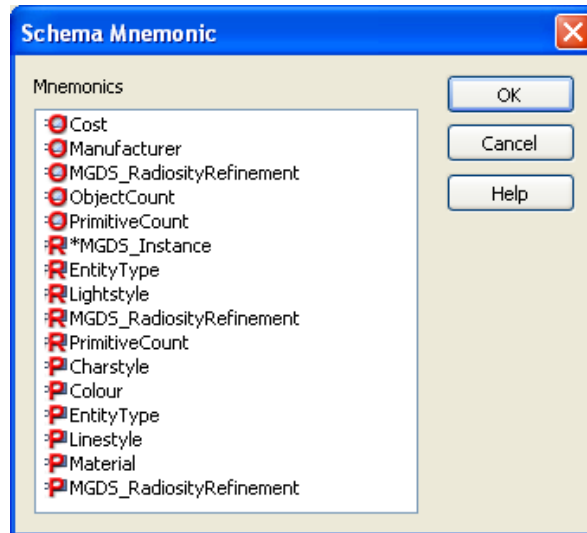
Notice that Cost and Manufacturer are shown in the list, followed by a number of existing mnemonics that are supplied with MicroGDS.

7 Select Cost, press SHIFT and select Manufacturer, then click OK.

8 Click Save As, type **Gym equipment** in the Style Name dialog box and click OK.

9 Click Close.

Creating the Asset Manager schema Definition

1 On the Styles tab of the Document Organizer, click (New Schema).

2 From the Type list, select Layer.

3 To specify the layers to which the schema is to apply, click Add.

4 In the Layer filter box, type **Furniture**, and click OK.

5 To specify the mnemonics that are to be available to the corresponding layer objects, under the Mnemonic box, click Add.

6 From the Schema Mnemonic dialog box, select your two Asset Manager mnemonics and click OK.

7 Click Save As, type **Asset Manager** in the Style Name dialog box and click OK.

8 Click Close.

9.4   Assigning attributes

With both the mnemonic definitions and schema definitions now created, you can now assign attribute data to the gym equipment.

1   In object mode (F10), select one of the stepper objects:

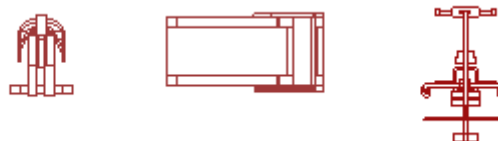**2**   To open the Properties window, press CTRL+Q.

You will see your two layer mnemonics and your two object mnemonics as shown below:
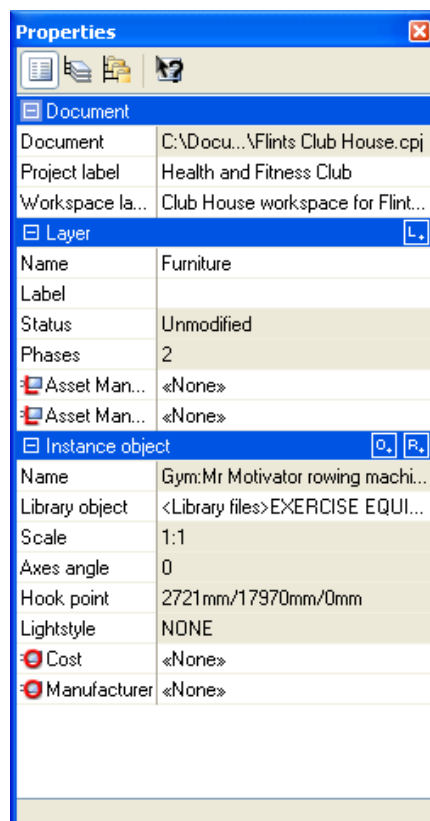
The mnemonics currently all show <<None>> as no value has yet been assigned.

3   In the window definition, press SHIFT and select one of each of the treadmill and multi-gym objects:

You should now have three objects selected:

Notice that although many details change in the Properties window, all attribute values are still set to <<None>>. If you now set a value for a mnemonic, it will be applied to the mnemonic for all selected objects to which it applies.

Assigning the manufacturer attribute

1 On the Properties window, under Instance Objects, double-click Manufacturer.

The Edit Property Value dialog box is displayed:
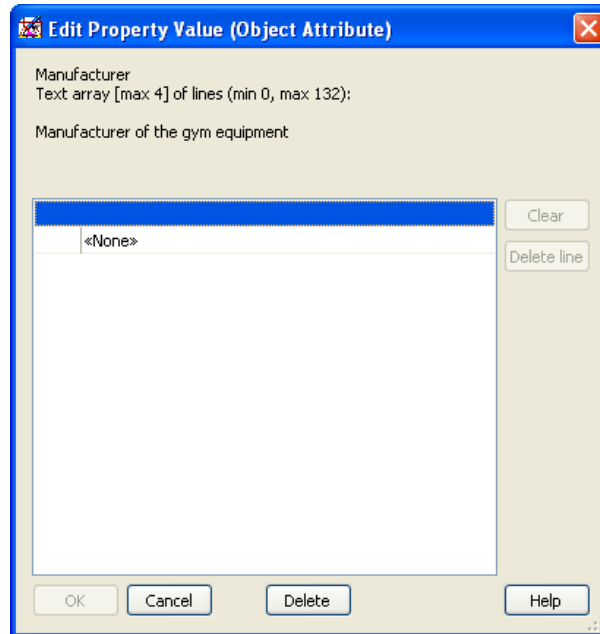
2 Type each line then press **Return**, as follows:

**Gym World
57 Cedar Court
Oakfield
Suffolk SU3 5CP**

3 Click OK.

4 Select different types of gym equipment. You will see that the Manufacturer's name has been added to the stepper, the treadmill and the multi-gym, but none of the other equipment.

Assigning the asset manager attribute

You will now assign the asset manager to the gym equipment. As the asset manager is at Layer level, you only need to assign the manager's name to one object. It will automatically be added to all other items on the Furniture layer.

1 In Object mode, select a single stepper, and on the Properties window, under Layer, double-click Asset Manager.

2 From the list select Terry Taylor.

3 Query any other piece of gym equipment to see that Terry Taylor has been added as the asset manager.

Assigning the cost attribute

You will now assign the cost to the treadmill. The cost is at Object level
Applicability, so when you assign cost to one object, it is automatically
assigned to all other objects with the same name.

1   Select one treadmill and on the Properties window, under Instance
Object, double-click Cost.

2   In the Edit Property Value dialog box, type **250.00**, and click OK.

3   Click on another of the Treadmill and you will see its cost is defined
as 250.00.

4   Click on any other piece of gym equipment and you will see that it
has no cost defined.

9.5   Using attribute data to filter objects in a phase

In the next three sections you will define the maintenance date for the gym equipment; you will then assign maintenance dates to the treadmills, and then use attribute data in inclusion lists to filter the objects in phases.

Defining the maintenance date of equipment in the gym

1   Open the Mnemonic Definition dialog box.

2   As the maintenance date for each piece of equipment will be unique, select Reference from the Applicability options.

3   To define the name for the mnemonic, type **Maintenance**

4   In the prompt box, type **Maintenance date: for example 27 August 2008**

5   Select Date from Type list.

6   Type **1** in the Maximum list.

7   Select (GMT) Greenwich Mean Time in the Time zone list.

8   From the Date format options, select Long date and from the Time format options, select Omitted. (We will not include time in this exercise.)

**9**   Click Save and then click Close.

Assigning the maintenance date

You will now assign a maintenance date to the four treadmills. Although you could add the mnemonic to an existing schema or create a new one, here you will add the mnemonic manually to the treadmills. Then, as the maintenance date is at Reference level, you will assign the values individually.

1   Select the four treadmills in the window definition.

2   In the Properties window, click ⬛ on the right side of the Instance Object section:

The Add Reference Attribute dialog box is displayed.

3   Click the Maintenance mnemonic to add it to the Value box:
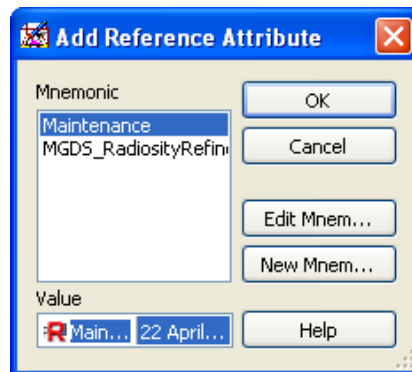
4   For now, accept today's date for each treadmill by clicking OK.

The Maintenance mnemonic is now available to each of the treadmills.

5   To assign a specific date, select the first treadmill only in the window definition.

6   In the Properties window, double click today's date. A calendar is displayed:
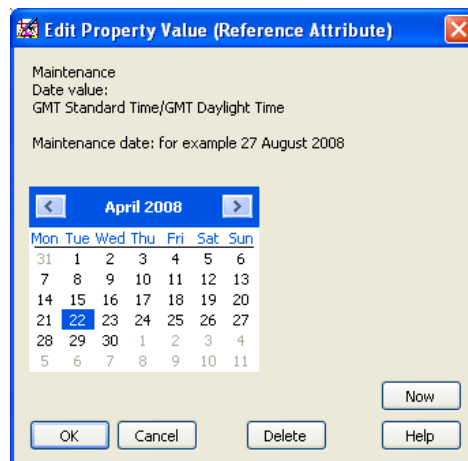
7   Click on the banner (April 2008) and from the list select **February 2010**, click on **16** and then click OK.

**8**   Repeat steps 5 to 7 for the other three treadmills, assigning the following dates in turn:

  14 April 2010
  09 July 2010
  16 November 2010

Filtering objects by attribute data

In your Gym window definition, you have a layer on which all the gym equipment is drawn. You will create a new phase and use attribute data filtering to show only treadmills that have a maintenance date on or before 30 June 2010. You will then create another phase to show only treadmills that have a maintenance date after 30 June 2010. The graphics referenced in each phase will be drawn in different colours.

Creating two new furniture phases

1   Press F2 to open the Window Editor.

2   Select the Furniture phase, press CTRL, and drag a copy of the Furniture phase to the bottom of the phase list.

3   Repeat step 2 so that you have two duplicates of the Furniture phase.
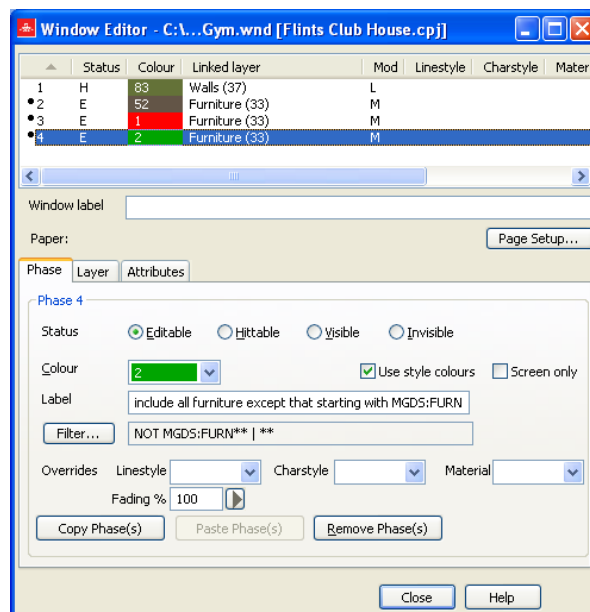

4   Change the colour of phase 3 to red (1) and phase 4 to green (2).

9.6   Using attribute data in a phase inclusion list

You will now use attribute data to filter the maintenance dates for the Treadmill in a phase inclusion list.

1   Select one of the two new furniture phases you have created and click the Filter button. The Filter Editor is displayed showing the Filter you set up to exclude all furniture starting with the name MGDS:FURN:
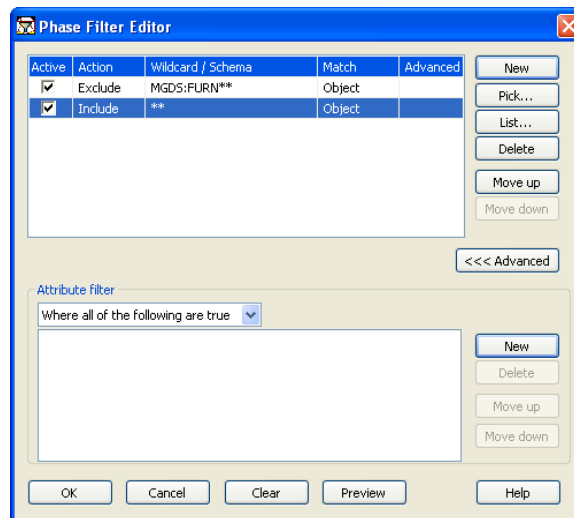
2   From the second item in the Phase Filter list click on ** and select Gym equipment. Leave the other panes as shown above.

3   Click the Advanced button and ensure that **Where all of the following are true** is selected.

4   From the first pane of the Attribute filter list select **R.Maintenance**.

5   From the second pane of the list select **Before**.

6   From the third pane of the list click the Browse button to display the calendar. Select 30 June 2010.
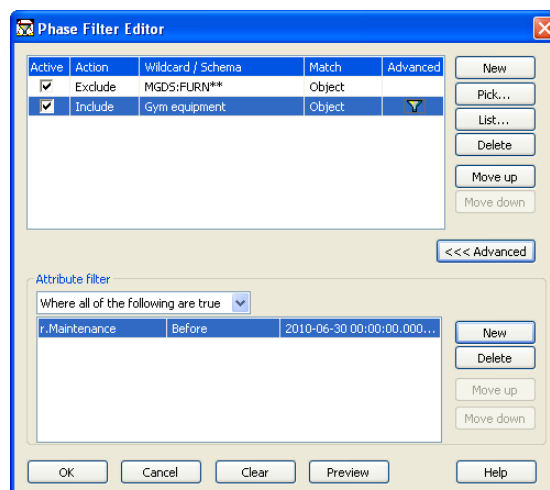
7 Select the other new furniture phase you have created and click the Filter button.

8 Repeat steps 2 to 6 except from the second pane of the Attribute filter list select **After**.
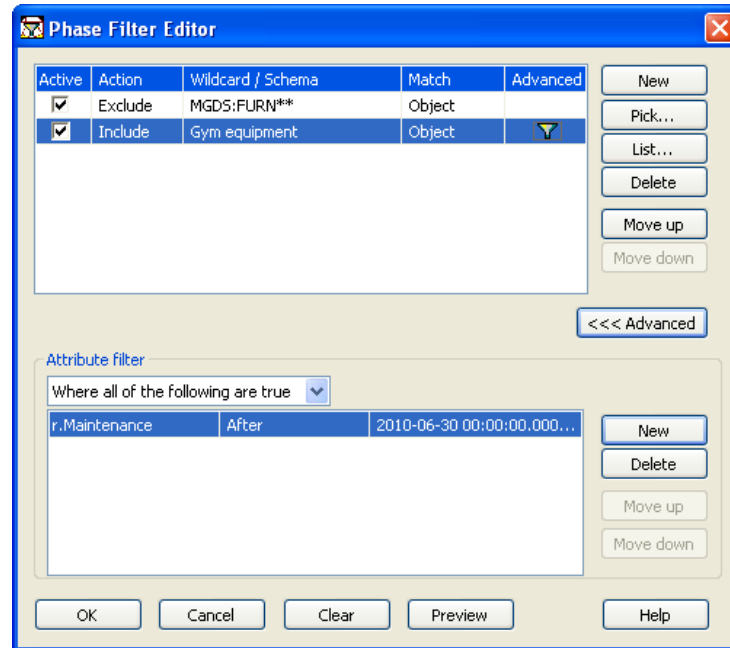
9 Click OK and then close the Window Editor.

10 Make sure all your graphics are deselected.

Two of the treadmills are now displayed in green, and two in red. All other gym equipment is displayed in the original grey.
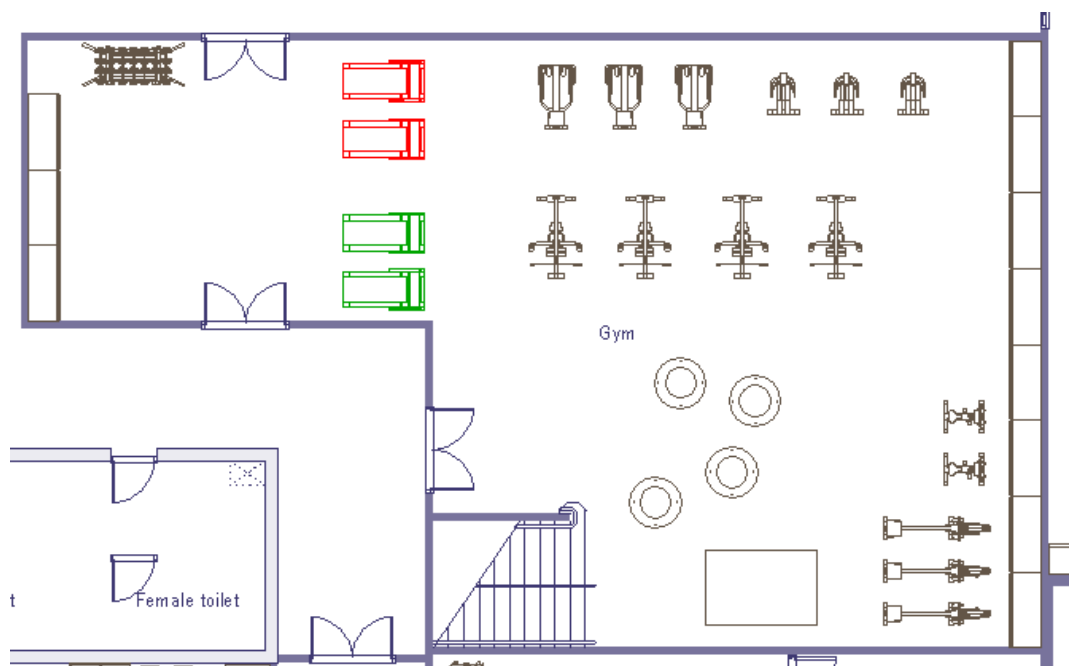
9.7   Creating an object format definition file

You can create a report of the objects in a window definition. However, you first need to create an object format definition file to specify what information is to be displayed in the report and how it will be laid out. You must load this file before you generate your report.

A format definition file is a text file, which you can create in any text editor. It must be saved with the extension .FRM.

There are a number of format definitions that you can use to extract object information. In this exercise you will use the *title* and *column* definitions:

- Title inserts the name of each mnemonic listed in each column, at the top of the report
- Column inserts the attribute data of the named mnemonic, between the specified column numbers

1   Open Notepad and type the following (ensure NAME is in capital letters. Don't forget you added a shortcut to Notepad on My Menu:
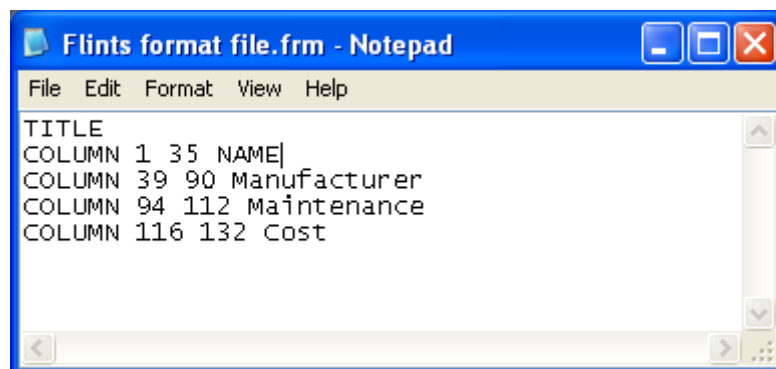
The above file will generate the following information:

- the object name, between columns 1 and 35
- the name of the manufacturer of that object as set by your attribute data, between columns 39 and 90
- the Maintenance date for that object as set by your attribute data, between columns 94 and 112
- the cost of the object as set by your attribute data, between columns 116 and 132

For full information, see Creating an object format file in Help.

2   Save your file as **Flints format file.frm** in your Flints Health and Fitness Club project folder. Ensure that you select from Save as type 'All files'.

9.8   Creating an object schedule

When you have created your object format file, you first load the file, and then create your object schedule.

1   On the Object menu, click Format.

2   Browse to your Flints format file.frm and click Open to load the format file.
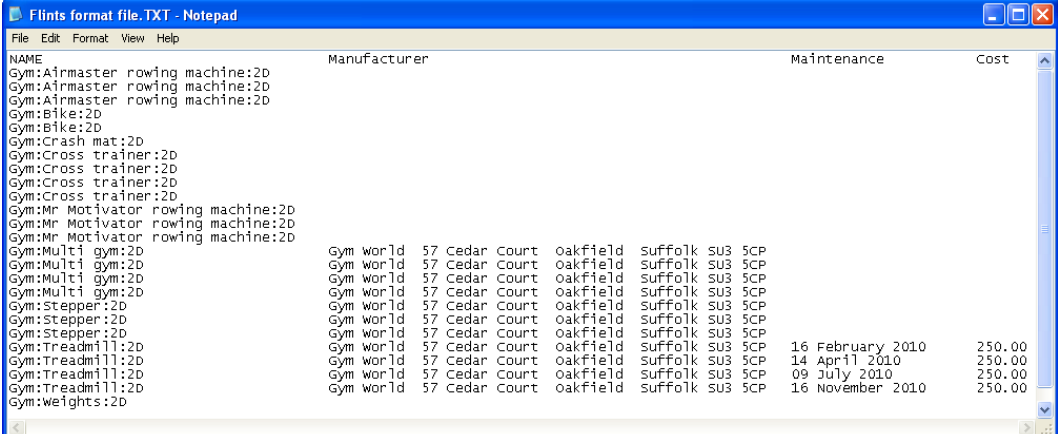
Before you create your report, you will specify the objects to be included in the report.

3   On the Information bar at the bottom of the MicroGDS window, click the SETEDIT button to open the Set Edit Filter Editor.

4   Click New.

5   In the Wildcard/Schema box, select Gym equipment and click Close.

Notice that the text on the SETEDIT button changes to red when editing restrictions are active. This will restrict the following selection to objects included in the Gym equipment schema.

6   On the Edit menu, click Select All. Note that only the Gym objects are selected.

7   On the Object menu, click Schedule.

8   Click Yes at the prompt '…do you wish to schedule the selection list?'

A report is produced in the following format:

9   To clear your editing restrictions before proceeding, double-click the SETEDIT button to open the Set Edit Filter Editor, click Delete, and then click Close.

Exercise 10: Assigning the asset manager's telephone number

1   Assign the asset manager's extension number (256) to the gym equipment.

As the asset manager's telephone number is at Layer level applicability, you will only have to assign the manager's extension number to one object. It will automatically be added to all other items on the Furniture layer.

For further assistance, follow the steps in *Assigning the asset manager attribute* earlier in this section.

2   Save and close the Gym window definition and the Flints Clubhouse workspace.

10. Linking to and inserting documents

Dynamic Data Exchange

Dynamic Data Exchange is a windows convention for linking data between programs. Links between the source and the destination program are set up, so that when the data is modified in one program it is automatically updated in the other.

You can create DDE data in MicroGDS using some of the query commands.

Object Linking and Embedding

You can use Object Linking and Embedding (OLE) to share information between Windows programs.

You can, for example, embed or link MicroGDS MAN files in other applications, and similarly, you can embed or link data from other applications in MicroGDS.

For full details see Object linking and embedding in Help.

When you link data, it is stored in the source file: the destination file stores only the location of the source file and displays a representation of the linked data. When the source file is updated, the linked data is also updated. It is therefore important not to move or rename the source data, otherwise the link will be broken.

In this section you will count all the Car parking spaces and display this as linked data. You will then delete some of the parking bays. You will now see how MicroGDS automatically updates the linked data to reflect the new number of parking bays.

10.1 Dynamic data linking

In this section, you will use the Query Number command to find out how many parking bays there are, and then paste this information back into your window definition.

1   Open Flints Site workspace.

2   Open the Parking & landscaping window definition.

3   Zoom in to the car park area.

4   In the Mini Window Editor, double-click the Car park phase to make it current.

5   On My toolbar, click Axes Move, and place your axes in the area just above the island as illustrated below:
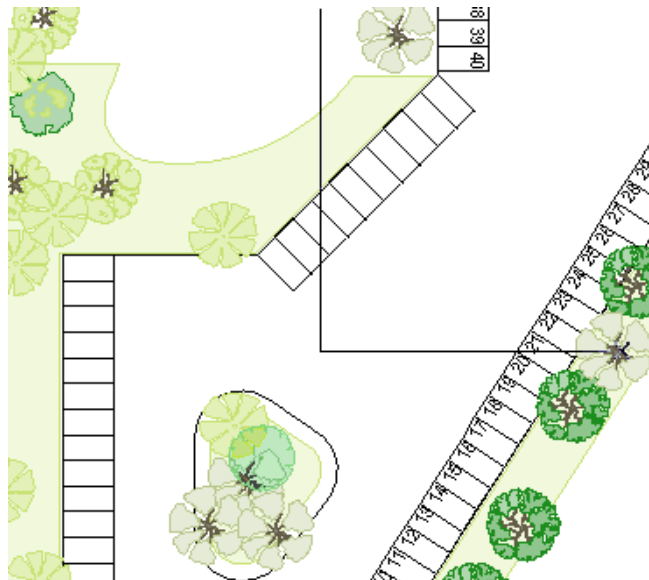

6   Create a new object and name it Number of bays: Place the hook point as illustrated above.

7   From the Char list, select Arial Narrow 2000 High.

8   On the Query menu, click Number, and at the prompt bar type Parking** (the objects we wish to count are named Parking Bay) and click ✅

The following message is displayed showing the count as 70.
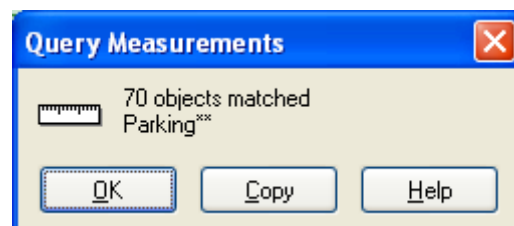
9   Click Copy, and from the Edit menu, click Paste Special.

10 On the Paste Special dialog box, select Paste Link, and ensure
        MicroGDS Linked Data is selected, and then click OK.

.

        70 is placed at the Object hook point.

11 Double-click the text you have just placed

        The following text, shown as a formula, is displayed in the text box:

        ^(NUMBER(16,Parking**))

12 Edit the text to read:
        There are ^(NUMBER(16,Parking**)) parking spaces in this car park

13 Click the Centre Justification button, and click OK.
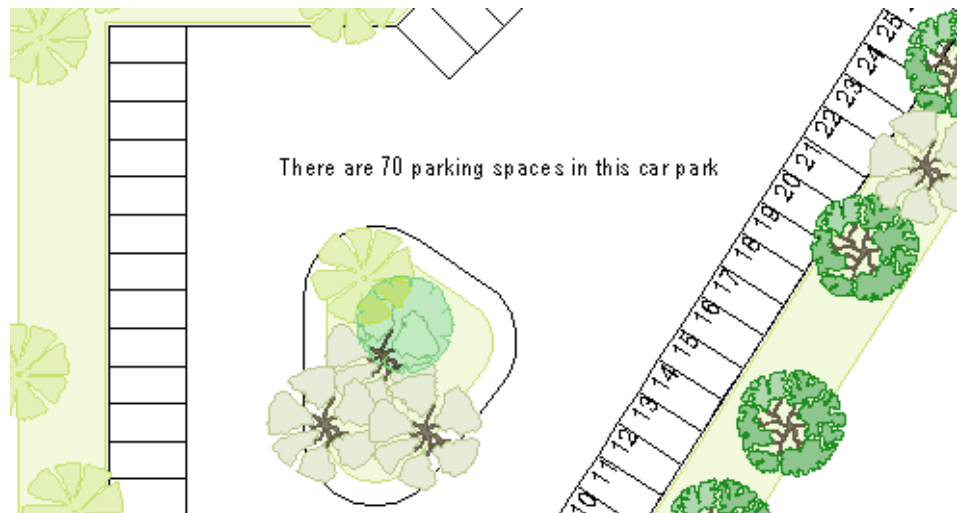
14 In object mode, delete three of the parking bays on the left side.
        Notice that the text is automatically updated.

15 Save and close your project workspace.

10.2 Linking MicroGDS to Microsoft Word

Preparing your graphics

1 Open Flints Club House workspace and double-click the Overall site plan view to open it.

2 Zoom in to the lake area and joggers restaurant. Create a new saved view and name it 'Picnic Table layout'.

Opening the Word document

• Use Windows Explorer to go to your Advanced training data folder and double-click Garden Furniture Quote.doc to open it in Microsoft word:

MicroGDS·Advanced·training·course
Cambridge

Amazing·Furniture·Limited
Woodcut·Avenue
Oaktreeford
Limeshire

Dear·Sir

Further·to·our·conversation·please·quote·for···picnic·chairs·and·tables·as·illustrated·below:

We·look·forward·to·hearing·from·you·in·due·course.

Yours·faithfully

A.N.·Trainee

Creating a dynamic link to the number of tables and chairs

1 Make phase 7 the current editable phase.

2 In MicroGDS, on the Query menu, click Number.

3 At the Objects to count prompt, type **EXTERNAL TABLES* and click ✅
The number of Objects counted is displayed in a Message box:

Query Measurements

14 objects matched
EXTERNAL TABLE

OK   Copy   Help
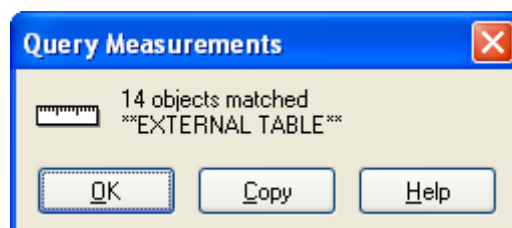
4   Click Copy.

5   Go to your Word document, and place the cursor between the text 'quote for' and 'picnic tables'. On the Edit menu, click Paste Special. On the Paste Special dialog box, click Paste link and then click OK. (This depends on the version of Word that you are using)

The number of tables and chairs is inserted in your letter.

Creating a dynamic link to the table and chairs graphics

The picnic tables and chairs are instances referenced from the Furniture MAN file. You will insert the man file into your word document.

1   In your Word document, place the cursor on the next line after the words 'as illustrated below'.

2   On the Insert menu, click Object.

The Object dialog box is displayed:
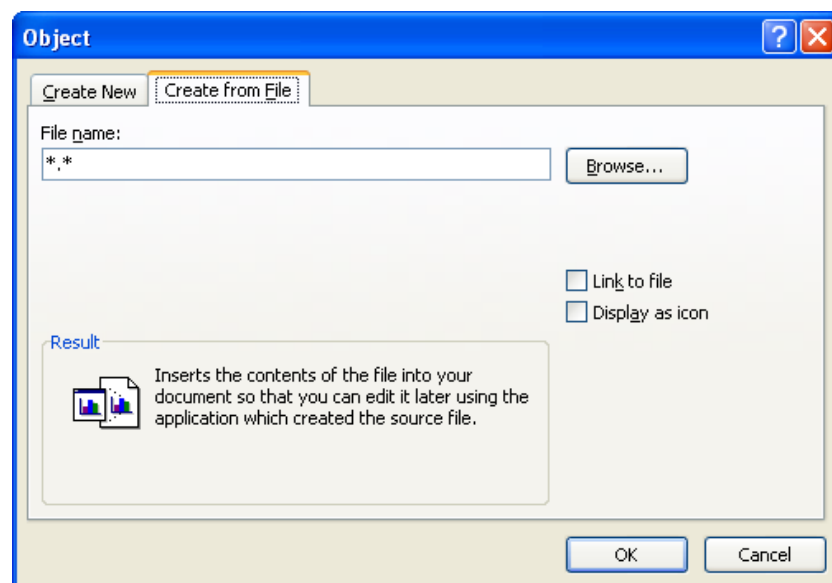
3   Click the Create from File tab, and Browse to *drive*:\Flints Health and Fitness Club\Library files\Furniture.MAN.

4   Select the Link to file check box, and then click OK.

A dynamic linked copy of the picnic table and chairs is inserted into your Word document.

**5**   Select the object, and then drag one of the box corners to approximately half its original size.

6   Ensure that you only have MicroGDS and Word application windows open on your screen. Click on an empty space on the taskbar, and from the shortcut menu, select Tile Windows Vertically.

MicroGDS and Word are tiled next to each other, but you may have to make fine adjustments to make the two windows display appropriately.

7   In Word, double-click the picnic table and chairs to open the linked MAN file in MicroGDS. You now have the Picnic table layout window definition and the Furniture.MAN file open..

8   Click on the title bar of the 'Picnic table set' window definition to make it current. In primitive mode, individually select and delete three chairs, leaving only the top chair as illustrated below:
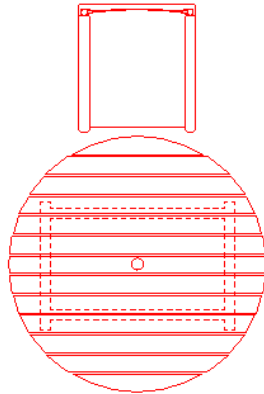
9   Select the remaining chair, and on the Construct menu, click Array, Polar. In the Fixed Number box, type **3** and then click OK.

**10** Place your copies with an Inside snaps in the middle of the table.
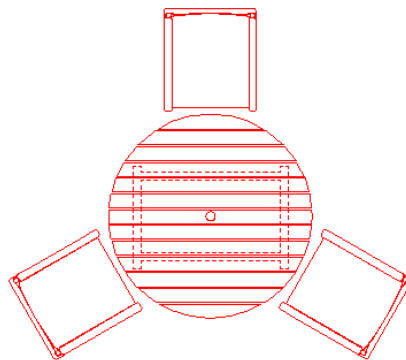
11 Save the Furniture.MAN file. MicroGDS and Word should update automatically, but this may depend on the version of Word that you are using. If your Word document does not automatically update, select the table and chair object and on the shortcut menu, click Update Link.

12 In the Picnic table layout window definition, select a picnic table and chairs and click Delete. The number of picnic sets in the Word document will update automatically. Again if this does not happen automatically, select the number, and on the shortcut menu, click Field Update.

13 In Word, save and close Garden Furniture Quote.doc.

14 In MicroGDS close 'Picnic table set'.

15 Save and close Flints Club House workspace.

11. Exporting Windows to PDF

You can export a window definition in a MicroGDS document to a PDF file. PDF (Portable Document Format) is an open file format created by Adobe Systems, and is used for representing two-dimensional documents in a device independent and resolution independent fixed-layout format.

1   Open Flints Site workspace, the Parking and Landscape Window definition and the Parking and Landscape View.

2   Click Draw Extents to maximize your view.

3   Click File, Window, Export.

4   From the Save as type, select PDF file, and click Save.

The PDF Export dialog box is displayed:
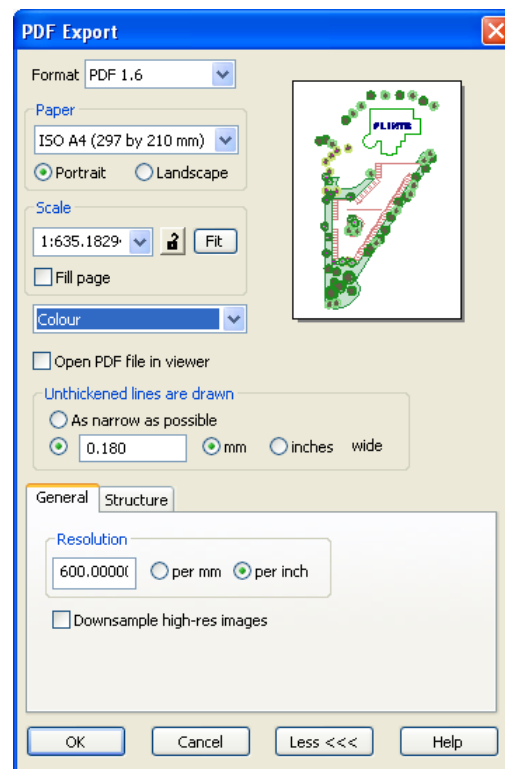
5   From the Paper list select A4, select the Portrait option, and from the Scale list click Fit. Click OK.

For a full explanation of all the PDF Export options please refer to Help.

6   Open your PDF file in either Adobe PDF Reader (you can download Adobe Reader from the Adobe web site, www.adobe.com), Adobe Acrobat, or a viewing and markup tool such as Rasterex version 7.3 or 8.0.

7   Close your Flints Site workspace and Exit MicroGDS.

12. Project and man file templates

MicroGDS has many time saving commands and features, one of which is the ability to create template files. This will not only save you time when setting up new projects and drawings, but can also help to maintain company standards.

This final section of the course gives an overview of the template files that you can create and use. The information given here is purely reference, and no exercises are included. For full details on creating and using templates, refer to the MicroGDS Help.

Project templates

You create a MicroGDS project template from an existing project. Project templates create:

- project databases (.cpd)
- project workspaces (.cpj)
- alias locations
- style search paths

All files and folders that lie below the project database file (.cpd) in the project template structure are copied to the new project database. Any aliases and style search path locations that reference folders outside of this structure are created in the new database.

You specify project templates using the Multi-user tab on your preferences. To add a template, browse to the location of the project database file (.cpd) that is to be used as the template, and then specify a name for the template. This is the name that MicroGDS displays in the Template list when you create a new project database.

Single user template files

You can also use a template when you create a single-user document.

Templates can create graphics and styles in new documents. For example, you could set up a template that has:

- a drawing frame
- your company logo
- a standard set of styles for a particular type of drawing

Template files are standard MicroGDS files that you save with the extension .mtf.

You specify the location of single-user document templates using the File Locations tab on your preferences. MicroGDS defaults to this location when you select the 'From template' option when you create a new file.

Congratulations, you have now completed the MicroGDS Advanced training course.