4D Workshop3
User Guide

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The software guide explains use of 4D Workshop3, a set of tools designed to aid the development of 4DGL programs, 4DSL Scripts and project development for the GFX2 and SGC chip configurations of the 4D Processors.

INTRODUCTION

The 4D - Workshop3 IDE provides an integrated software development environment for all of the latest 4D family of processors, such as the GOLDELOX-SGC, GOLDELOX-GFX2, PICASO-SGC, PICASO-GFX2, GOLDELOX-PoGa and respective display modules.

The IDE combines the Editor, Compiler, Linker and User Code Downloader to develop complete 4DGL applications and download to the embedded target 4D Processors configured with GFX configuration. 4D Workshop also has Editor and Compiler besides testing feature for 4DSL Scripts on 4D Processors configured with SGC configuration. All the necessary tools required to develop a display module application are within 4D Workshop. It includes,

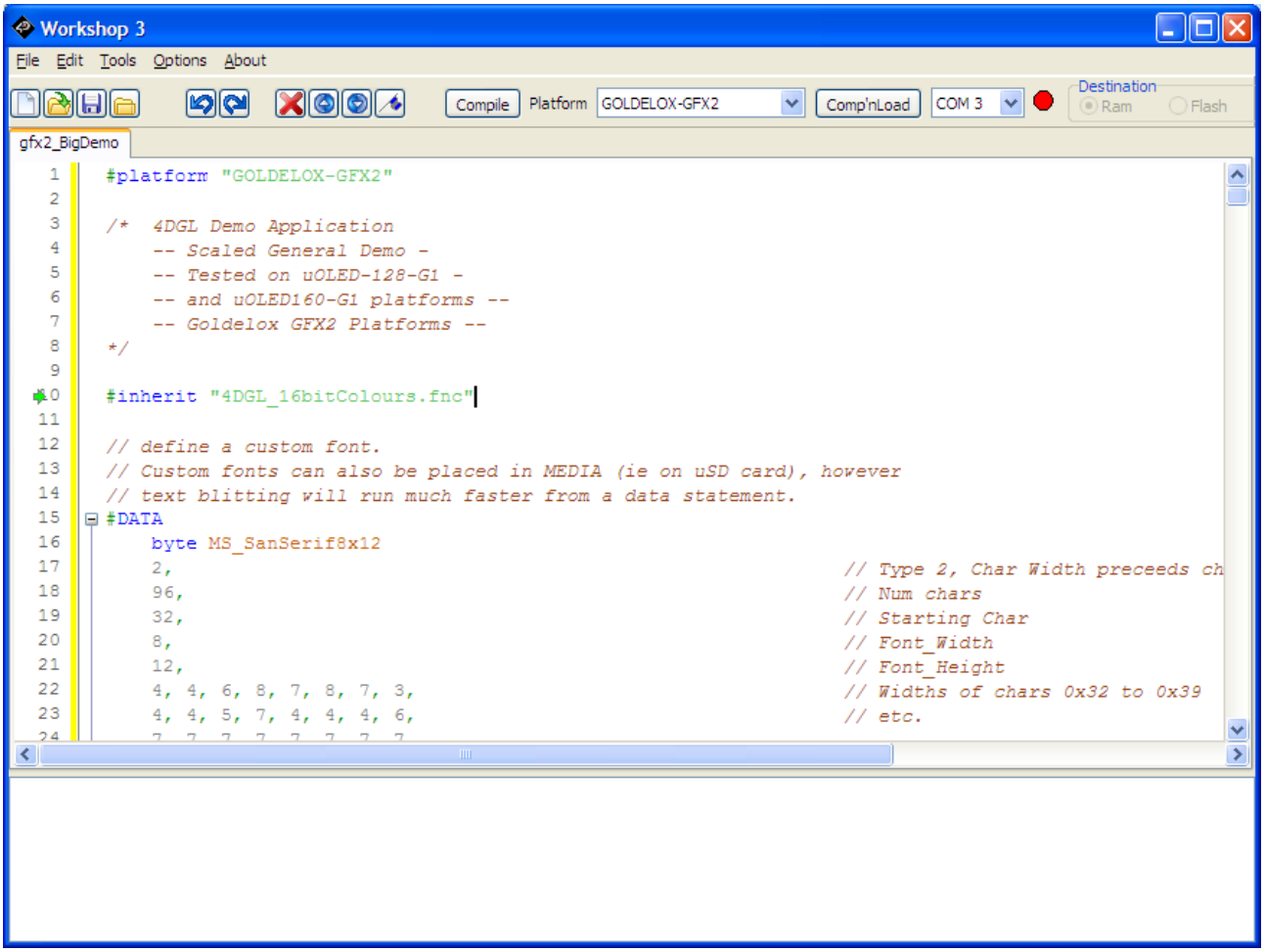
- PmmC Loader (Explained in this Document)
- Terminal Connect 9600 (Explained in this Document)
- Terminal Connect 15200 (Explained in this Document)
- PoGa Explorer (Check PoGa - 4DGL Portable Game Console Reference Manual)
- Graphics Composer (Check Graphics-Composer-User-Guide)
- Sprite Editor (Check PoGa - 4DGL Portable Game Console Reference Manual)
- 4DGL uVGA Link (Explained in this Document)

The downloaded setup application will create the required 4D-Workshop3 folders and install all the required files.

Note: that in-line with current Microsoft philosophy all samples (4DGL/4DSL programs) and demos are located in the 'All Users\Shared Documents\4D Labs' folder (XP) or 'Users\Public\Documents\4D Labs' folder (Vista and Windows 7).

DEVELOPMENT FOR GFX2 CONFIGURATION (4DGL)

4D Workshop3 supports the new generation of GFX2 processors, such as the GOLDELOX-GFX2 and PICASO-GFX2. This Workshop is 100% backward compatible with first generation of GFX, users of the older version of PICASO-GFX and GOLDELOX-GFX PmmCs should migrate to the new PmmCs as soon as possible as backward compatibility will be dropped at some future date.



There is also a terminal program available to establish serial communication with the GFX2 module. Code Completion and Parameter Hints provide 'instant' help. Compiler reports are generated after the compilation of 4DGL code in a split window. It can identify and locate errors in the code. By double clicking on the report line in the lower window, you can jump to the offending line for correction and re-compilation. Errors are also highlighted in the editor window.

DEVELOPMENT FOR SGC CONFIGURATION (4DSL)

4DSL stands for 4d Scripting language developed to provide the SGC modules, which are labeled as Slave devices, some degree of independence. 4DSL commands can be saved on the uSD card in the form of a File called 4DSL scripting file. The script files can be called from a host controller or they can be saved as autoexec.4DS file to run automatically on power up.

4D Workshop3 IDE or above are set to provide complete text editor to write a detailed 4DSL script. You can also test your script using the IDE while the module is connected to the PC via suitable interface.

4DSL command syntax or keywords are unique while the arguments are mostly the same as normal serial commands. Some of the commands can be run from the PC only which are named as Macros. They can be used for testing/debugging and to copy data to and from the SGC modules to enable field updating and or customization.

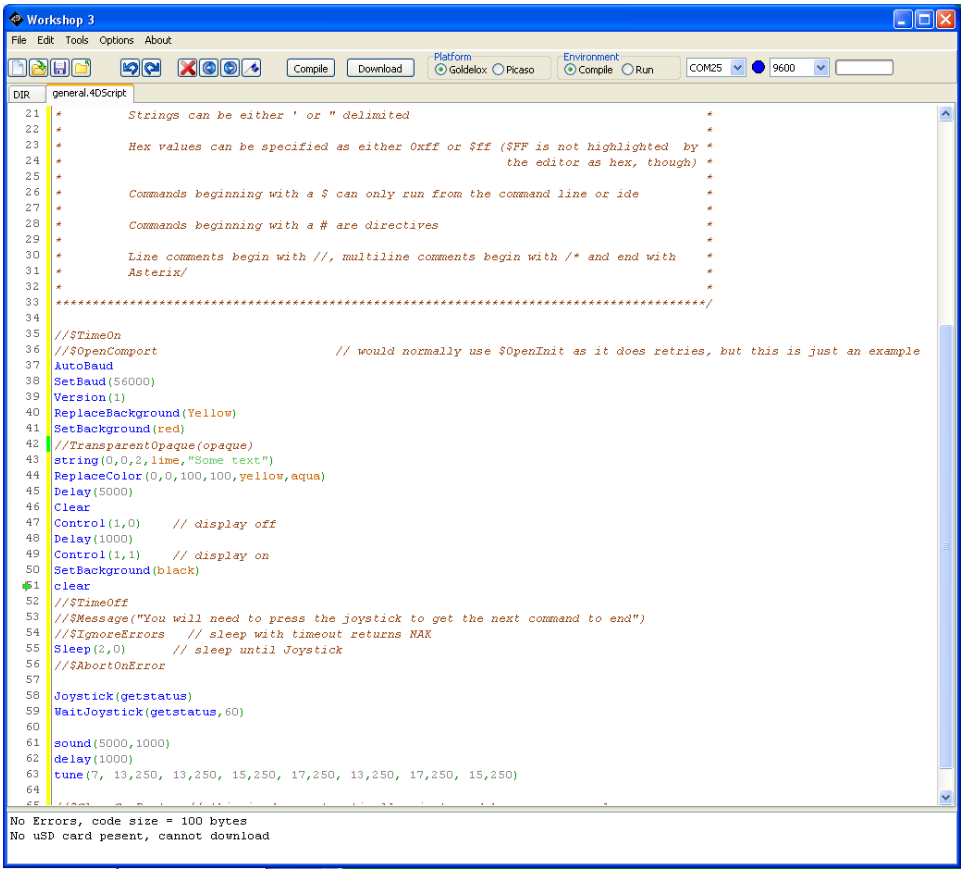
Scripts can be run on a Windows PC from within the Workshop 3 IDE, or from the command prompt, thus they can be embedded within .BAT files to enable 'simple' use in the field.

Note: Details of writing a 4DSL Commands are listed in the ***"PICASO-SGC-COMMANDS-SIS-rev4.pdf"*** or above.

Note: There are a number of 4DSL sample scripts in the 4D Labs folder. Refer to the note made earlier for the location of sample codes.

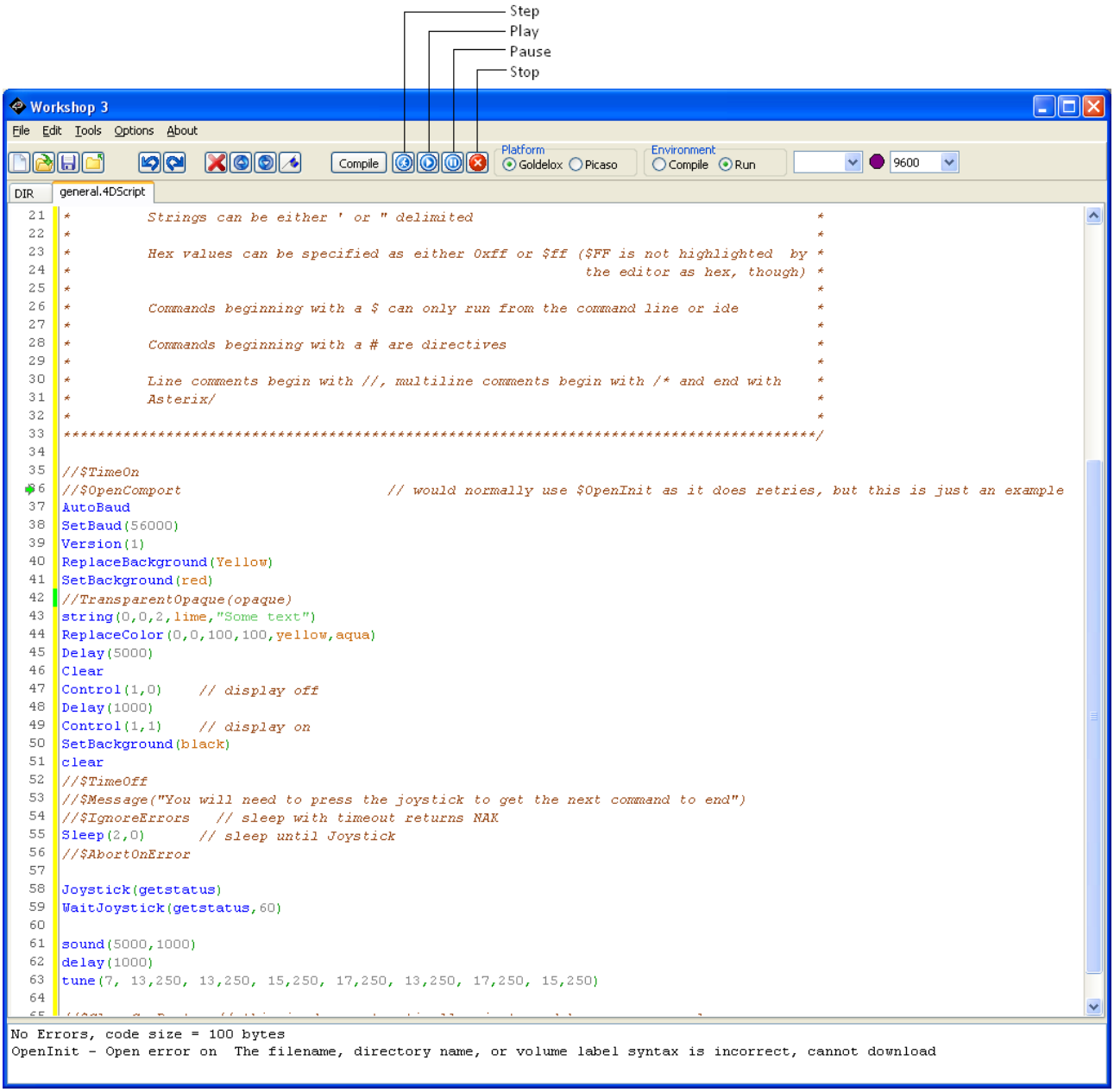
Compile Environment

With the compile environment you can develop 4DSL scripts and save them to the uSD card. Com port and Baud Rate are redundant in that case. The "Download" button is enabled which you can click to download to the uSD card. You can change the environment to "Testing environment" by clicking the "Run" check box.



Testing Environment

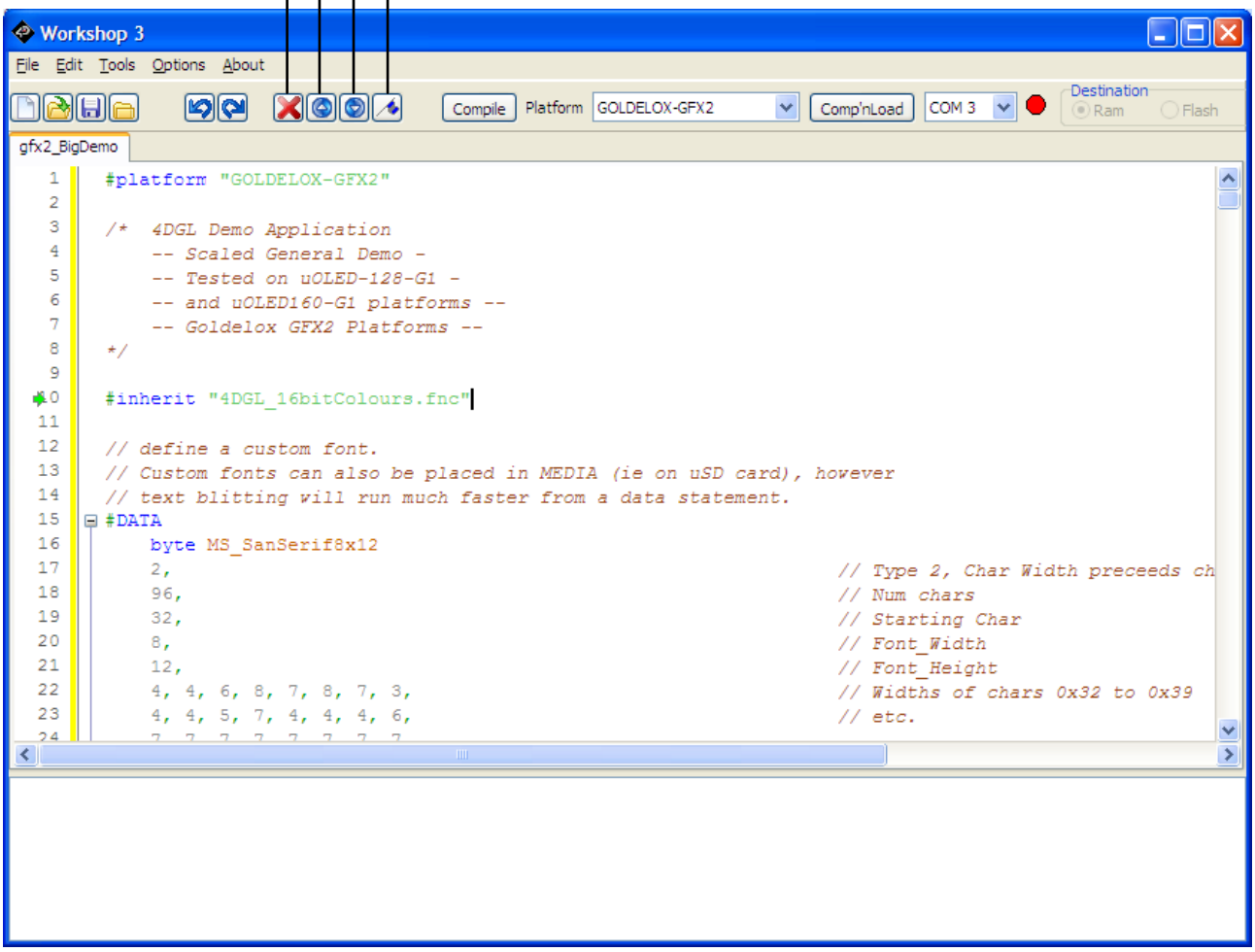
With the testing environment, you can use the controls such as Step, Play, Pause and Stop button to test the script. Before testing the script, Baud rate and com port need to be selected and the module should be connected to the PC. The Module should be installed with the SGC file. You can change the environment to “Compile Environment” by clicking “Compile” check box.



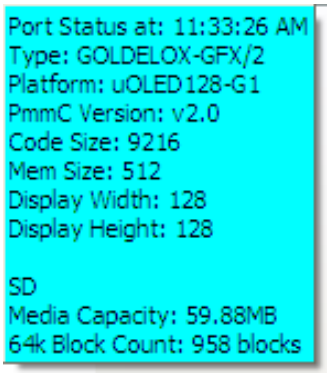
CONTROLS

Most of the buttons are self explanatory and display a hint if you hover over them with the mouse. The less obvious ones are shown below.

Toggle Bookmark
Previous Bookmark
Next Bookmark
Clear all Bookmarks



- Click 'New' to start a new program.
- Select the Platform from the Platform selection Combo box.
- Connect the module to the Computer.
- Select the com port, the module is connected to. The colored circle to the right of the com port will normally turn blue, hover over the circle or the com port combo box to see a hint with details of the module connected to that com port. See the figure. (The comports are automatically scanned when WS3 is started, or when devices are inserted, to force a rescan click on the colored circle)



Note: Before above step, make sure you have installed the GFX2 PmmC file to the module using the PmmC Loader.

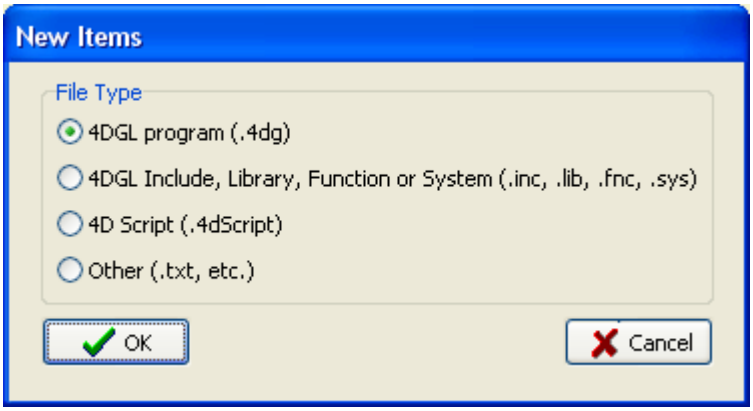
- Develop your code.
- The ‘Destination’ option is only applicable for Picaso Platforms.
- Click Compile to compile the code and Press Download button to burn the code to the module (or Comp’nLoad if you are feeling confident the compile will work correctly).

TEXT EDITOR

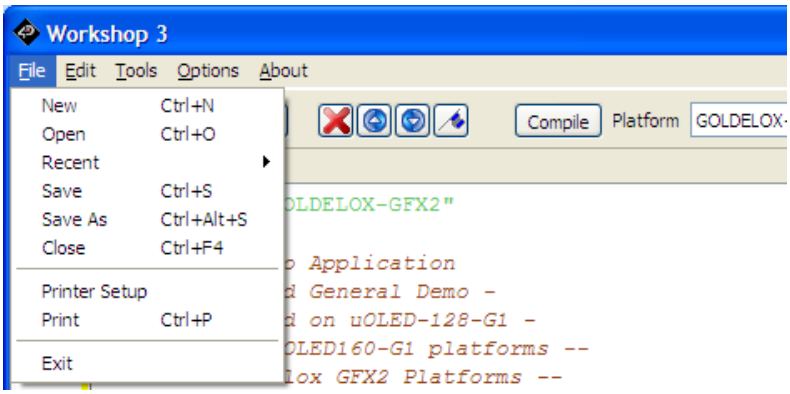
Most of the Main Menu bar contains text editing functions and tools, note the shortcuts available.

File

- Click New to create a new file. A dialogue box opens.

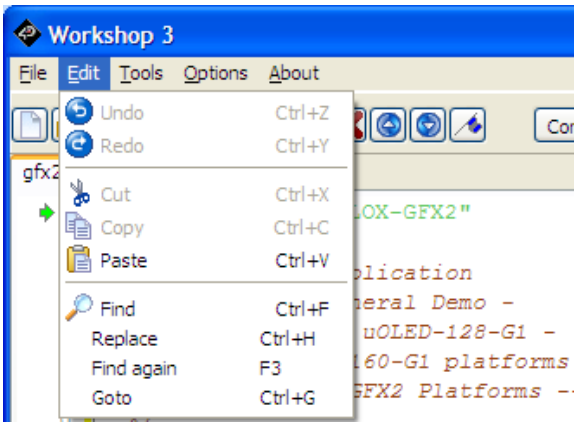


- Choose one option to suit your development platform.
- Click Open to browse and open an existing file with extension .4DGL, or any other (text) extension.
- Click Recent to view the recently accessed files, select a file to open or Browse.
- Click Save to save the modified files.
- Click Save As to create a copy of already saved file.
- Click Close to close the current file.
- Click Printer Setup to navigate to Paper/Printer settings dialogue box.
- Click Print to send for the quick print as per settings on the Printer Setup.
- Click Exit to Exit the 4D Workshop3. You will be prompted to save the changes to any modified files.



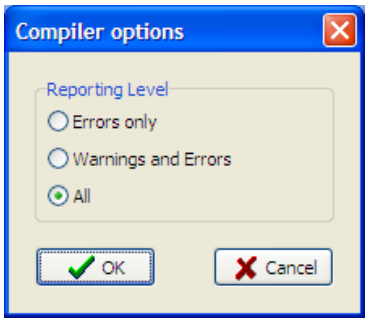
Edit

- Use Undo, Redo, Cut, Copy and Paste for usual text editing.
- Use Find, Replace and Find again for text finding and substitution.
- Click Goto line to jump to a specific line number.

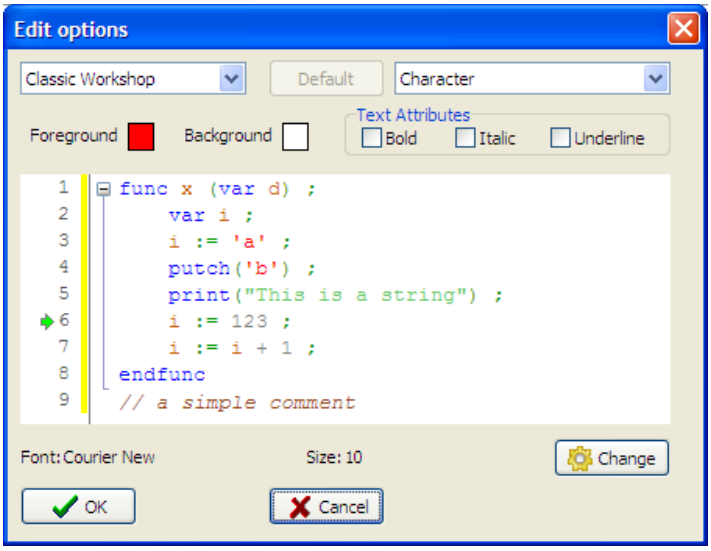


Options

- Click Compiler to enable adjustment of the error level reporting from the compiler.



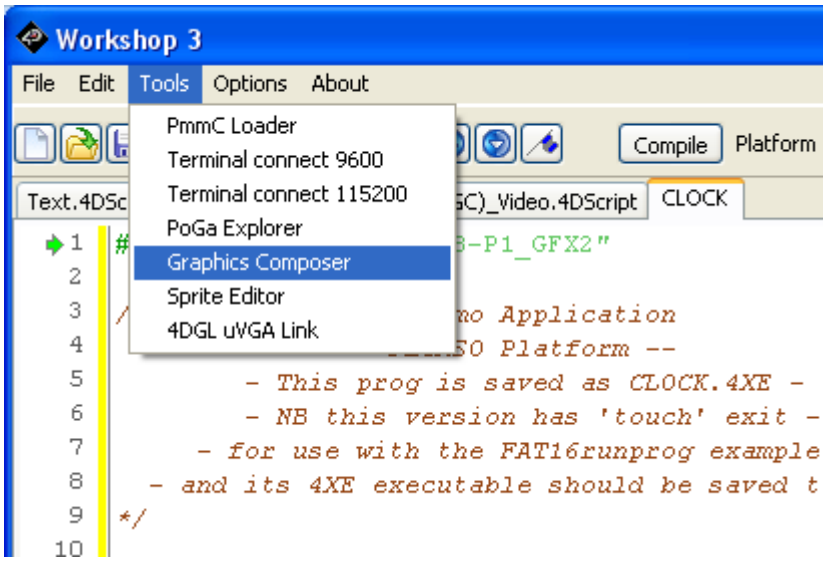
- Click Editor to adjust the editor Fonts, colorings and attributes. Note, currently the setting for 'Current Line' is not implemented; 'Current Line' is indicated by the green arrow in the gutter.



About

- Click About to display the current version of Workshop 3.
- Shortcuts to the 4D Systems website and forums are also available.

Tools

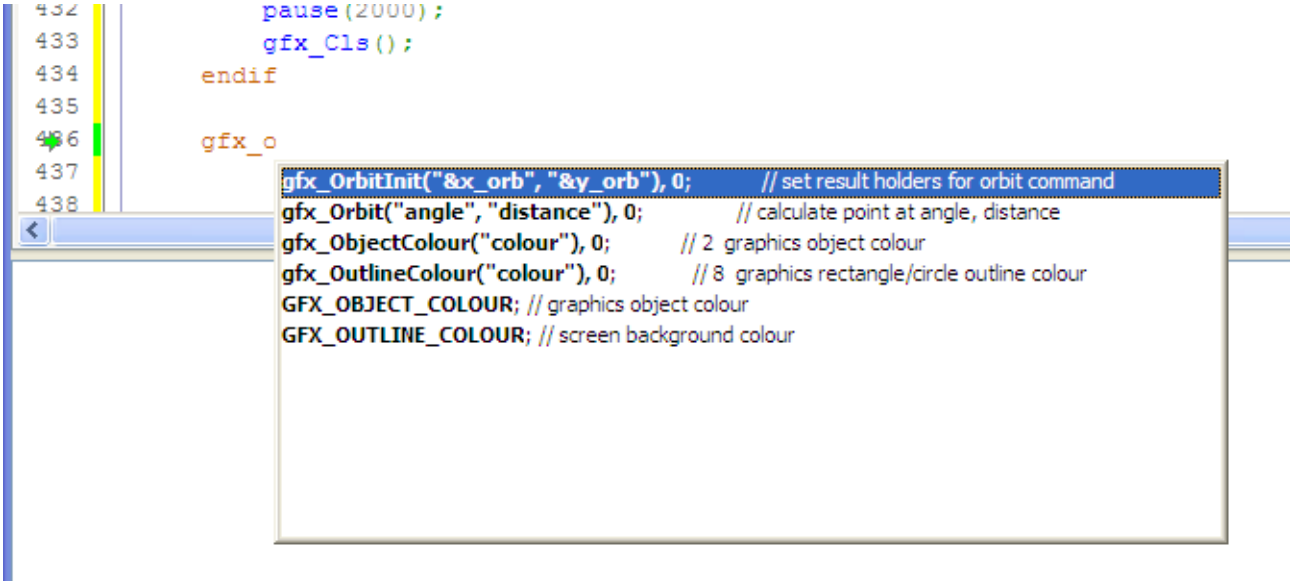


- Click PmmC Loader to start the PmmC Loader
- Click ‘Terminal connect 9600’ to open the currently selected com port at 9600 baud in the Terminal program.
- Click ‘Terminal connect 115200’ to open the currently selected com port at 115200 baud in the Terminal program.
- Click PoGa Explorer to open PoGa Explorer. Dedicated tool for PoGa
- Click Graphics Composer to open Graphics Composer.
- Click Sprite Editor to open Sprite editor.
- Click 4DGL uVGA Link to open an interactive window to use mouse/keyboard with the uVGA-II(GFX) module.
- Note that you can change and add to this menu. Read the comments and edit the Tools.cfg file in the Workshop 3 folder.

GENERAL EDITING TECHNIQUES AND TIPS

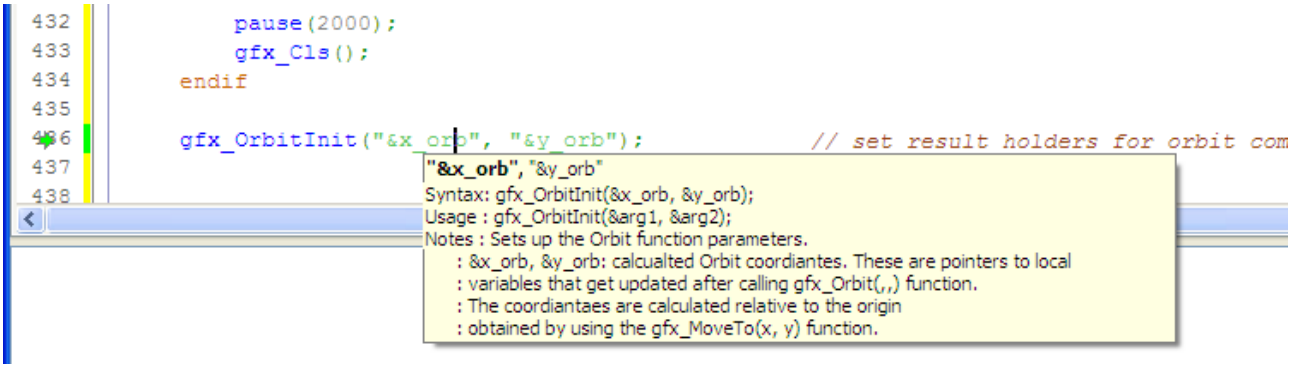
Auto Completion

If you can remember part of the name of a function or system constant type it in and then press ^Space (Control-Space) a list of all functions beginning with that name will be displayed, use the mouse to select then one you want and it will replace the part name.



Parameter Hints

Once you have the name of your function, move the cursor over the parameter list to cause the function's usage and parameter list to be displayed

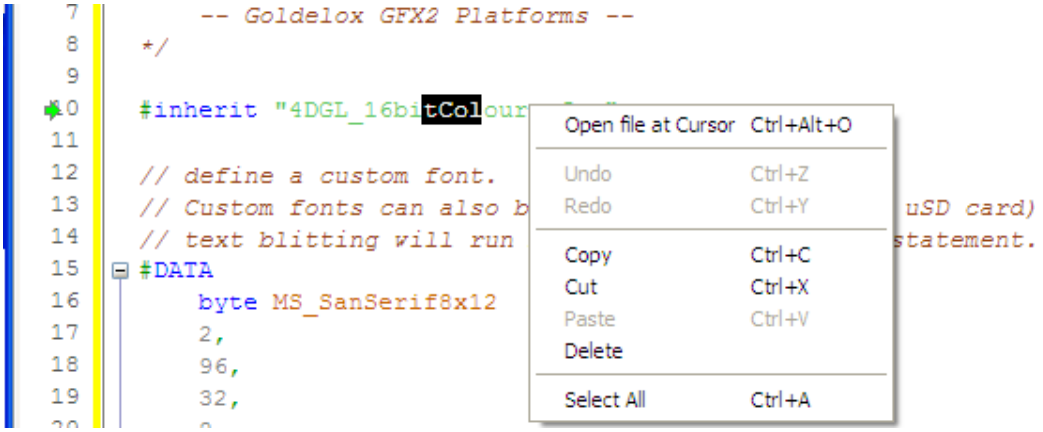


'Invisible' shortcut keys

- Press ^F9 to compile
- Press F9 to Compile and Load
- Most other shortcut keys are 'standard'

Right Click Popup

- Right Click the main text editing window to open a popup which contains all the utilities and function, in the Main Menu bar, in the form of a list. Select as required. Open file at cursor is available when there appears to be a double quote delimited filename at the cursor location.



Multiple tabs

- You can select/open multiple files in different tabs at the same time.
- To close a tab simply right click and Click OK to confirm.

DEVELOPMENT/TESTING TOOLS

PmmC Loader

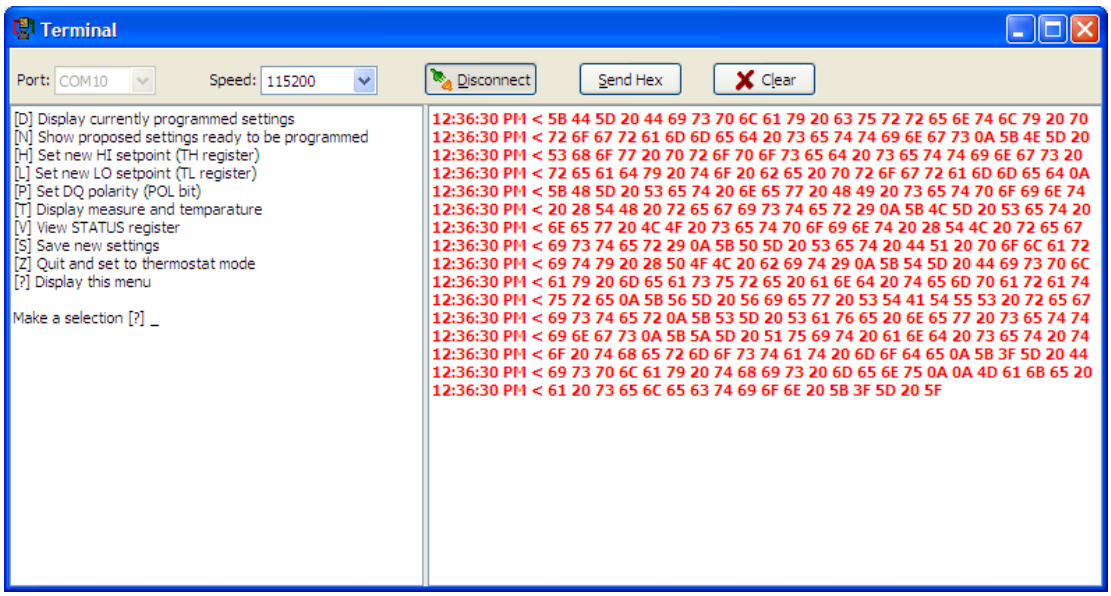
Refer to the PmmC Loader User Guide on the PmmC-Loader product page.

Terminal Connect

Click Tools, 'Terminal Connect 115200', a terminal emulation program will start; See the figure shown below.

- You can monitor your com port using this utility for programs you have written that require communication.
- Choose the Baud rates from the list of standard Baud rates in the Baud Menu (Default is 115.2kb).
- All data is shown in both HEX and ASCII.
- Use copy and paste by right clicking on the input area.

Note: Click Tools, 'Terminal Connect 9600', to start the terminal at 9600 baud rate.



PoGa Explorer

Refer to the **PoGa - 4DGL Portable Game Console Reference Manual** under the **Downloads** tab of the PoGa – Product Page.

Graphics Composer

Refer to the Graphics Composer User Guide.

Sprite Editor

Refer to the **PoGa - 4DGL Portable Game Console Reference Manual** under the **Downloads** tab of the PoGa – Product Page.

4DGL uVGA Link

It is a testing tool developed to interface a mouse and keyboard by simulating a blank VGA screen on your PC and sending the serial signal to the uVGA-II(GFX) module through the serial port to see the effects on the VGA screen. As you hover the mouse over the simulated screen and type something on the keyboard serial data is sent to the uVGA-II(GFX) which you need to interpret and use appropriately. Complete source code for the PC tool and the 4DGL program is available from 4D Systems.

A video of the application has been posted, Check the link uVGA-II(GFX).

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