4D Systems

Application Note: 4D-AN-1007

Playing Sound on PICASO-GFX2 Based Modules

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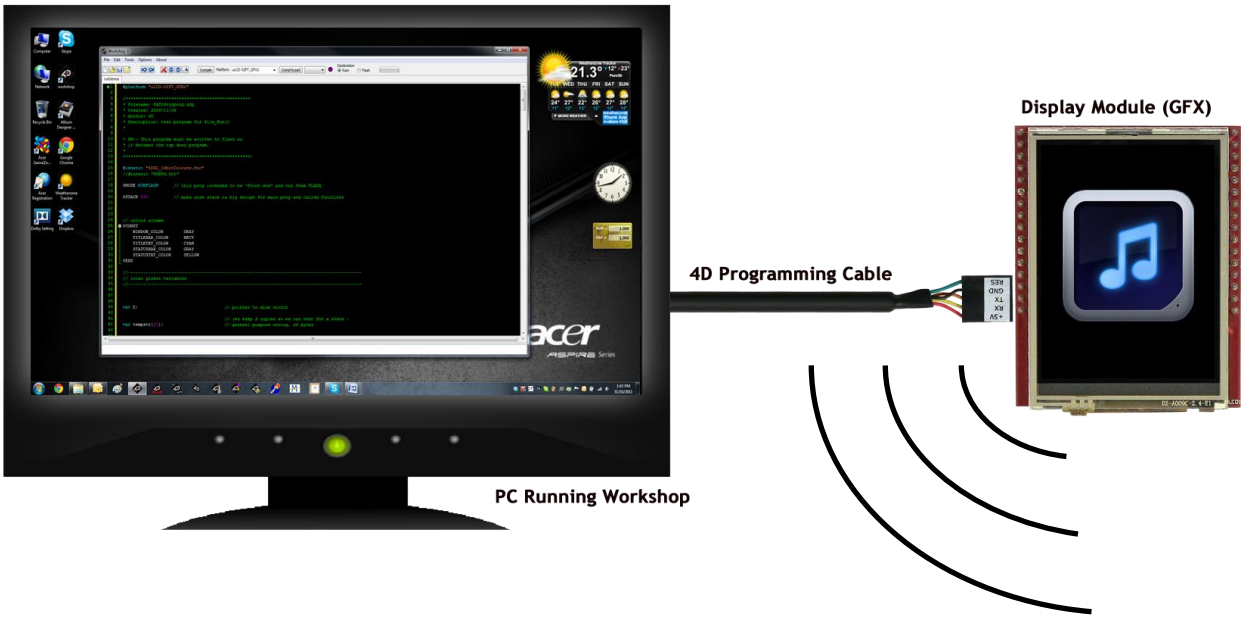
Description

This application note is a step by step procedure on how to play sound on a PICASO-GFX2 based module. In order to carry out this application note, the following items are required;

- Any 4D PICASO-GFX2 Display Module
- 4D Programming Cable
- 4DWorkshop3 IDE Software Tool
- micro-SD (µSD) Memory Card

Application Overview

The PICASO range of display modules are all equipped with a small speaker and audio amplifier chip, which is capable of producing a personalised .wav file supplied by the user. This application note will walk through the necessary steps to playback audio from a .wav file source on a 4D PICASO-GFX2 module. Once it is known how to produce these sounds, they can then be linked to such actions as a touch, received serial data, or when an image is displayed.



Setup Procedure

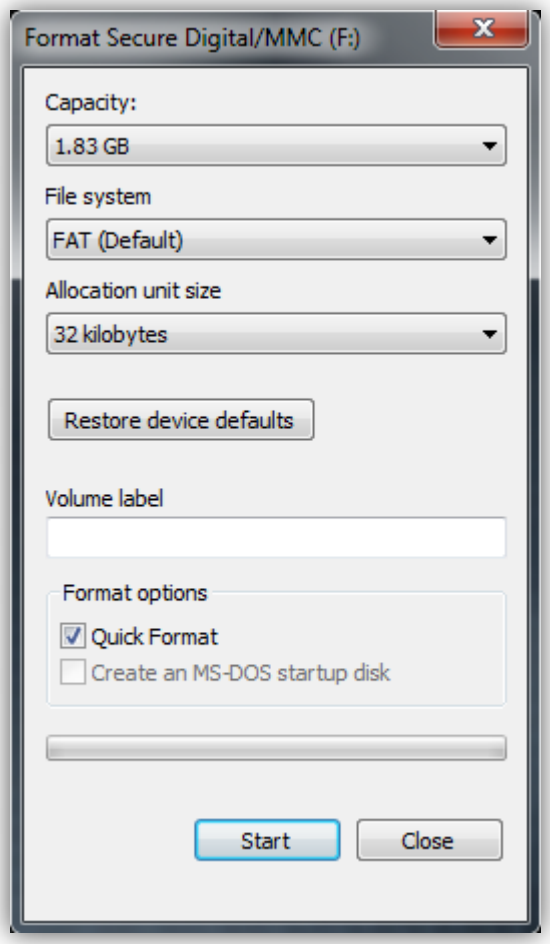
Firstly, you will need to download the 4DWorkshop3 IDE environment. This is where the end user application is developed and can be found from the 4D Systems website below:

http://www.4dsystems.com.au/prod.php?id=111

Simulation Procedure

Preparing the µSD Memory Card

In order to play a custom sound through a module, a µSD card must first be sourced for storing the .wav file. The first step is to format the µSD to FAT16 or FAT (Default). Insert the card into a PC and right click on the µSD card and select **Format**. Leave all settings as they appear, or change them accordingly as shown in the snapshot below. Press the **Start** button and the card will now be formatted.



Loading an Appropriate .WAV File

Now that the µSD card is formatted, it is ready to have the desired .wav file loaded onto it. Use any audio editing software to save the sound as a 16kHz Mono .wav file to your µSD card. Try and get as close to this frequency as possible, however, the extreme most thresholds are 22kHz and 12kHz. Anything outside these boundaries won't work. Insert the µSD card into the module and open Workshop to begin code development.

Essential commands for Producing Audio

To play a sound file at the most basic level, all that is required is mounting the drive and playing the .wav file. The following extract shows the necessary commands:

```
file_Mount();
file_PlayWAV("filename.wav");
```

Potential Issues

However, these commands alone are prone to improper use and potential errors. It is recommended that the following issues be addressed when dealing with these commands.

- µSD not inserted
- File not on the µSD card
- Incorrect volume level
- Not enough time to play the whole duration of the file

Functions to Combat Issues

Here is a list of functions available to combat these problems:

- file_Mount()
- file_Exists(fname)
- snd_Volume(var)
- snd_Playing()

Simple Example

The next snippet of code takes into account such possible issues:

```
while(!file_Mount())
wend

if(file_Exists("filename.wav"))
    snd_Volume(100);
    file_PlayWAV("filename.wav");
    while(snd_Playing());
endif
```

Complete Application Example

Finally, a fully scripted example is shown that includes error messages for any potential issues that may be encountered:

```
#platform "uOLED-32028-P1_GFX2"

/************************************************
* Filename: Sound.4dg
* Created: 3rd November 2011
* Author: 4D team
* Description: playing a WAV sound
************************************************/

#inherit "4DGL_16bitColours.fnc"

func main()
    repeat

    txt_Set(FONT_SIZE, FONT1);
    putstr("Mounting...");
    while(!file_Mount())
        putstr("Drive not mounted...");
        pause(200);
        gfx_Cls();
        pause(200);
    wend
    print("Drive mounted.");

    if(file_Exists("CHIMES.wav"))
        snd_Volume(100);
        file_PlayWAV("CHIMES.wav");
        while(snd_Playing());
    else
        putstr("CHIMES.wav not found");
    endif

    forever
endfunc
```

For detailed instructions on how to manipulate sound with your PICASO device, please refer to the separate document: PICASO-GFX2-4DGL-Internal-Functions PDF.

Proprietary Information

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