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Pinned Update #1

The **Darc Library (C++)** is now updated as of March, 2020. Click [here](#) too browse the entire solution.

Sunday, April 19, 2020

SSD1306 Code Sample

This post provides additional content for the following video. The code snippet should help ya get some pixels on your device. Please keep in mind, that the example has been ripped out of context and probably won't compile without some modifications.

Low-Level Drawing on SSD1306 over I2C



First, you need to define some write functions. The first one is specific to the IO-Warrior40 I used, so you will have to replace that. Also, note that my setup can only send 5 payload bytes in one batch, hence the fragmentation.

```
bool writeZeroToFiveBytes(Byte deviceAddress, const std::vector& bytes) { ... }

bool writeByte(Byte deviceAddress, Byte byte)
{
    return writeZeroToFiveBytes(deviceAddress, { 0xC0, byte });
}

bool writeBytes(Byte deviceAddress, Byte* bytes, UInt byteCount)
{
    if (byteCount > 4) return false;
    vector tmp;
    tmp.resize(byteCount + 1);
    tmp[0] = 0x40;
    memcpy(&tmp[1], bytes, byteCount);
    return writeZeroToFiveBytes(deviceAddress, tmp);
}
```

sending data over I2C

After that you need to define which region of the memory you want to write to. In this example data is copied horizontally column by column and then vertically. One page contains 8 pixels.

```
bool setColumnInterval(Byte deviceAddress, Byte startAddress, Byte span)
{
    Byte endAddress = startAddress + span;
    return writeZeroToFiveBytes(deviceAddress, { 0x00,0x21, startAddress, endAddress });
}

bool setPageInterval(Byte deviceAddress, Byte startAddress, Byte span)
{
    Byte endAddress = startAddress + span;
    return writeZeroToFiveBytes(deviceAddress, { 0x00,0x22, startAddress, endAddress });
}
```

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```
Byte deviceAddress,
Byte columnAddress, Byte pageAddress, const Vector2UInt&
pageColumnDim, UInt stride, Byte* data)
{
    setColumnInterval(deviceAddress, columnAddress, pageColumnDim(0) - 1);
    setPageInterval(deviceAddress, pageAddress, pageColumnDim(1) - 1);

    UInt totalBytes = pageColumnDim(0)*pageColumnDim(1);

    for (UInt y = 0; y < pageColumnDim(1); ++y)
    {
        UInt bytesLeftInPage = pageColumnDim(0);

        Byte* pageStart = &data[y*stride];

        while (bytesLeftInPage > 0)
        {
            UInt index = pageColumnDim(0) - bytesLeftInPage;

            UInt bytesToSend = std::min(4u, bytesLeftInPage);
            if (bytesToSend == 1)
            {
                writeByte(deviceAddress, pageStart[index]);
            }
            else
            {
                writeBytes(deviceAddress, &pageStart[index], bytesToSend);
            }

            bytesLeftInPage -= bytesToSend;
        }
    }

    return true;
}
```

sending image data to display

That should be it. Don't forget to initialize the device properly, including the contrast, color inversion, charge pump, etc. It's extremely important to do it correctly in the right order. Please refer to the [video](#), for more details.

By Sky at [April 19, 2020](#)

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