Advanced Direct Drive LCD – API Handout Guide

Description: Using the Renesas API to create real world LCD products

Commonly Used LCD Control API Functions

Function	Description
LCDInit	**Direct Driver initialization**
LCDOff	**Shuts down the LCD - powers down LCD module**
LCDBacklight	**Turns the backlight On/Off**

FUNCTION LCDInit(void)

DESCRIPTION: *Turn On the LCD and initialize the panel*
PARAMETERS:
RETURNS: Nothing
EXAMPLE:

```
LCDInit( );
```

FUNCTION LCDOff(void)

DESCRIPTION: Turns LCD Off.
PARAMETERS:
RETURNS: Nothing
EXAMPLE:

```
LCDOff ( );          // Turn of LCD
```

FUNCTION LCDBacklight(state)

DESCRIPTION: Nonzero value turns backlight on.
PARAMETERS: state - Nonzero value
RETURNS: Nothing
EXAMPLE:

```
LCDBacklight(1);     // Turn on LCD backlight
LCDBacklight(0);     //Turn off LCD backlight
```

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Commonly Used Graphics Display API Functions

Function	Description
LCDBMPCopy	**Copy BMP into Frame Buffer**
LCDBMPFill	**Fill a given area from a color table**
LCDBMPGPutS	**Puts a text string on the display**

FUNCTION LCDBMPCopy(BMP_type const *const s, BMP_type *d, sI16 PosX, sI16 PosY)

DESCRIPTION: Copies image into frame buffer
PARAMETERS: Source, Destination, Screen Position X, Screen Position Y
RETURNS: Nothing
EXAMPLE:

```
LCDBMPCopy(&BMP1, &Frames[0], 90, 75);          // Copy BMP1 into framebuffer #0)
```

FUNCTION LCDBMPFill(BMP_type *const d, const sI16 dPosX, const sI16 dPosY, sI16 Width, sI16 Height, ColorTable_type const *const ct)

DESCRIPTION: Fill a given area of the LCD with contents from a color table (ct)
PARAMETERS: Frame Buffer, Start POSx, Start POSy, Raster Width, Raster Height, Color Table
RETURNS: Nothing
EXAMPLE:

```
LCDBMPFill(&Frames[0], 0, 0, LCDRasterData.Width, LCDRasterData.Height, &local_ct );
```

FUNCTION LCDBMPGPutS(uI08 const * s, GPUT_type const *Gdata, BMP_type *d, sI16 PosX, sI16 PosY)

DESCRIPTION: Put text on the LCD display
PARAMETERS: Text Source, Font Information, Destination Frame Buffer, Screen Position X, Screen Position Y
RETURNS: Nothing
EXAMPLE:

```
//Font foreground is black and the background is transparent
const GPUT_type T2 = { &fontTerminal, {{0x00,0x00,0x00,0x00},{0xFF,0xFF,0xFF,0x00},}, 0, 0, 1,
                                                                                0, {0,0,0,0,0,0}};
char text_buffer[16];
LCDBMPGPutS((uI08 *)text_buffer, &T2, currentFrameBuf, 0, 36);
```

Secret Decoder Ring

BITMAP FILE HEADER:			
Start Address	Size (Bytes)	Name	Purpose
00	2	bfType	must always be set to 'BM' to declare that this is a .bmp-file.
02	4	bfSize	specifies the size of the file in bytes.
06	2	bfReserved1	must always be set to zero.
08	2	bfReserved2	must always be set to zero.
0A	4	bfOffBits	specifies the offset from the beginning of the file to the bitmap data.
BITMAP INFO HEADER:			
Start Address	Size (Bytes)	Name	Purpose
0E	4	biSize	specifies the size of the BITMAPINFOHEADER structure, in bytes.
12	4	biWidth	specifies the width of the image, in pixels.
16	4	biHeight	specifies the height of the image, in pixels.
1A	2	biPlanes	specifies the number of planes of the target device, must be set to zero.
1C	2	biBitCount	specifies the number of bits per pixel.
1E	4	biCompression	Specifies the type of compression, usually set to zero (no compression).
22	4	biSizeImage	specifies the size of the image data, in bytes. If there is no compression (0)
26	4	biXPelsPerMeter	specifies the the horizontal pixels per meter , usually set to zero.
2A	4	biYPelsPerMeter	specifies the the vertical pixels per meter, usually set to zero.
2E	4	biClrUsed	specifies the number of colors used in the bitmap
32	4	biClrImportant	specifies the number of color that are 'important' for the bitmap
36			Start of Palette