ECE3221 Pre-Lab 5

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C-Code:

//-------------------------------------------

// SUBROUTINES

/\*\*

Returns the 16-bit RGB color from the pixel (x,y) on the VGA Display

\*/

int readxy(int x, int y)

{

return \_\_builtin\_ldwio((short\*)((x|16<<0x16|y<<9|0)\*2));

}

/\*\*

Writes the 16-bit color rgb to the pixel (x,y) on the VGA Display

\*/

void writexy(int x, int y, int rgb)

{

if( (x<0) || (x>319) ) return;

if( (y<0) || (y>239) ) return;

// Store value int x shifted and y shifted to correct value

\_\_builtin\_sthio((short\*)((x|16<<0x16|y<<9|0)\*2), rgb);

}

/\*\*

Returns a 5-bit intensity value given a 16-bit VGA pixel color.

where intensity = (red + green + blue) / 3;

Use only the 5 most significant bits from the 6-bit green component.

\*/

int intensity(int pixel)

{

int blue = pixel & 0b11111;

pixel >>= 6;

int green = pixel & 0b11111;

pixel >>= 5;

int red = pixel & 0b11111;

return (blue + green + red) / 3;

}

/\*\*

Waits for a keypress (falling edge) on PB0. (0 = pressed = checked).

Provides a user prompt on the Terminal window so that it does not appear

that the calling program has stopped when this function is invoked.

\*/

void waitonPB0(void)

{

printf("Press button to continue\n");

int button = \_\_builtin\_ldwio((void\*)(0x10000050));

// check if pressed

while(button != 1)

button = \_\_builtin\_ldwio((void\*)(0x10000050));

// check if let go

while(button != 0)

button = \_\_builtin\_ldwio((void\*)(0x10000050));

}

// END

//-------------------------------------------