LAB2 take home QUIZ NAME: Jeff Kremer ID: 11524078

DUE: During DEMO time to TA

Reference: vid.c file in BOOK

1. font0 is a font file of ASCII chars, from 0 to 127, each char = 16 bytes.

```
   font0 = | 16-byte | 16-byte | .....  | 16-byt |
   ASCII        0        1                 127
```

Each char is a 16 x 8 bitmap:

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```

in which a 1-bit means WHITE pixel
0-bit means BLACK pixel

(1). The 480x640 VGA screen can display HOW MANY rows of char? **30 rows**
HOW MANY chars per row? **80 chars per row**

(2). Explain: How is an ASCII char c displayed at (row, col) = (x, y)?
HELP: read the code of dchar() and setpix()

dchar displays a char at coordinate (x,y). Dchar fetches the 16 bytes of the char from the bitmap. The space at (x,y) is cleared, then setpix is called to set the pixel if that bit is 1.

(2). How to scroll the screen UP by one row?

Move everything up a row to give the illusion of scrolling. The scrolled up portion is kept in a buffer.

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1. What does the following statement do?_**compile ts.s into object code**
arm-none-eabi-as -mcpu=arm926ej-s -g ts.s -o ts.o

2. What does the following statement do?_**compile t.c into object code**
arm-none-eabi-gcc -c -mcpu=arm926ej-s -g t.c -o t.o

3. What does the following statement do?_**link together object code into non-executable binary**
arm-none-eabi-ld -T t.ld ts.o t.o -o t.elf

4. What does the following statement do?_**convert non-executable binary into executable binary**
arm-none-eabi-objcopy -O binary t.elf t.bin

rm *.o *.elf

echo ready to go?
read dummy

qemu-system-arm -M realview-pbx-a9 -m 128M -kernel t.bin \
-serial mon:stdio -serial /dev/pts/4 -serial /dev/pts/5 -serial /dev/pts/6