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A Text-Based Window System for Low-tier Embedded Systems

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LCD 가

, 가

(text)

Unix Curses

240x320

, 20KB

1.

LCD

n 172KB Video RAM()

가

[2]가

, LCD

2

2.

[1].

가

- n ARM Cortex M3 Processor
- n 48KB SRAM
- n 16KB ROM
- n 256KB NAND Flash memory

3.

- n 2.8 inch TFT color

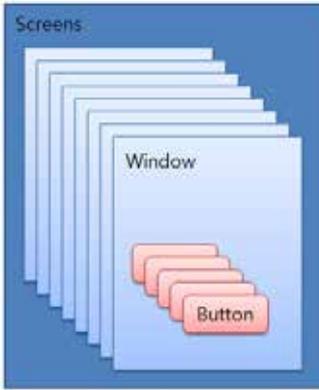
LCD

- n QVGA : 240x320

1

가 , 4.1

가 .



(1)

가

, 가

가 ,

가 ,

(callback)

가,

4.2 Text

가 가 ,

240x320

가 .
18bits

12x16

“ ”

172KB
256KB

20x20

가 .

2

가

가 ,

가

$$20 \times 20 \times (8 \text{bits} + 24 \text{bits} \times 2) = 2.73 \text{KB}$$

CGA(Color Graphics Adapter)[3] Unix Curses Library[4]

가 ,

TUI[5]

가

가

TUI
2.73KB
20 400

, 가

가

가 ,

1 가

20

$$20 \times 20 \times (8 \text{bits} + 24 \text{bit}) + 24 \text{bit} = 1.57 \text{KB}$$

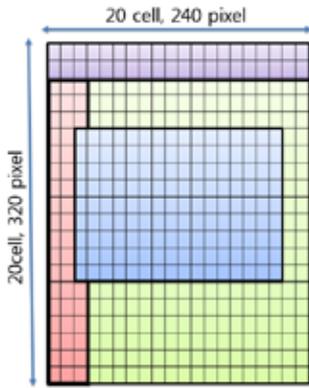
$$20 \times 20 \times (8 \text{bits} + 24 \text{bits} \times 2) = 2.73 \text{KB}$$

가 ,

172KB

2.73KB

가



(2)

4.3

RGB 8bit 24bit

64 가

24bit 가 5bit 가

1byte

$$20 \times 20 \times (8 \text{bits} + 8 \text{bits}) + 8 \text{bits} = 0.78 \text{KB}$$

$$24 \text{bit} \times 64 = 192 \text{Byte}$$

3 TUI 1



(3)

4.4

가 , 가

가

5.

Pop-up , Pop-up , Pop-up , 가 , 가 , (4) 0.81KB

가

가

200 가

가

64 가

32

5

4 1 2 가 , 32

20KB

20KB

가 ,



(4)

- [1] Atmel, SAM3S-EK Development Board User Guide, Atmel (2011)
- [2] Ubinos, <http://www.ubinos.org/>
- [3] Wikipedia, Color Graphics Adaptor, http://en.wikipedia.org/wiki/Color_Graphics_Adapter
- [4] N. Matloff, Introduction to the Unix Curses Library, Dept. of Computer Science, UC Davis, Apr. (2011)
- [5] Wikipedi, Text-based user interface, http://en.wikipedia.org/wiki/Text-based_user_interface