CS510 Languages and Low Level Programming: Portfolio submission #1

Due on April 8, 2016 at 12:00pm

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Attempted Topic:
Write simple programs that can run in a bare-metal environment using low-level programming languages.

Narrative

At first I attempted to write simple "editor" that allows to enter and delete text (unfortunately without navigation keys). As text entered it appears on the screen, only printable characters can be printed. Enter will create new line, and backspace delete previous letter.

The "editor" has two major problems, I am going to attempt to solve in the future. First and easy, Backspace stops working after scrolling, since array that keeps track of the maximum number of characters per line doesn't get updated. Second, there is no scroll back, i.e. history is simply erased during scrolling. This problem can be aided at some degree by creating fixed text buffer, however, a better solution would be to enable HEAP memory allocation (maybe this is too ambiguous, I am hoping this will covered by one of the future lecture topics).

Main functionality lives in hello.c (shell() function). After trying "editor", simplistic emulation of a terminal was created: as text typed it saved to a buffer (100 symbols long) after return "expression" evaluated and corresponding method is called. Available options are displayed at the time "terminal" is created.
I reused all the functions we written for the first lab (setAttr, cls, outc, outhex), by adding videoasm as a dependency to hello, and making "video, row, col" global variables.
Input is done by reusing provided getc function from "simpleio" library.

In conclusion: overall it was a great introduction exercise, with fair amount of assembly, and low level programming.