Open-source Software Lab

Lab 8. mxxd: minimal hexdump

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Overview

- `xxd` is a Unix utility to convert a binary file to a text file, and revert the conversion for transmitting binary data via text channel
  - xxd manual: https://linux.die.net/man/1/xxd

- `mxxd` is a `xxd` replicate with two primitive features
  - bin-to-text conversion: generate text representation of a given file
    - ex. `mxxd a.out msg.txt`
  - text-to-bin conversion: receive a text generated by mxxd and then restore the binary file
    - ex. `mxxd -r msg.txt a.out`

- Submission deadline: 4 PM, May 11

Bin-to-text conversion

- Each line represents the information of 16 bytes of a given file, with the following elements:

    (1) the starting offset as an 8-digit hexadecimal number followed by "﹕ "

    (2) eight blocks of 4-digit hexadecimal numbers followed by two whitespaces " "
    - each block represents the two bytes of a given file

    (3) prints 16 characters each of which visualizes the ascii symbols of
    the 16 bytes of the line

    - print dot ('.') for non-ascii values or control characters

    - the ascii symbol table is found at https://www.asciitable.com

- Ex.

```
00000000: 7f45 4c46 0201 0100 0000 0000 0000 0000  .ELF............
00000010: 0300 3e00 0100 0000 6010 0000 0000 0000  ..>.....`.......
00000020: 4000 0000 0000 0000 7839 0000 0000 0000  @.......x9......
00000030: 0000 0000 4000 3800 0d00 4000 1f00 1e00  ....@.8...@.....
```

Text-to-bin conversion

- Read a text file generated by mxxd and restore the original binary file
  - receive input from the standard input
  - produce the result to the filename given after the `-o` option

- Do not create a binary file for a text-to-bin conversion if the text file has a syntax error
  - use `tmpfile()` and `rewind()`

Other Requirements

- Consider various error cases, and handle each case by printing out proper error message and terminating the program

- Create a private github repository to maintain the project

- Write a build script as a Makefile

Submission

- Submission
  - submit the resulting program to HDLMS by 4 PM, Thur May 11