CS530, Fall 2013, Program Assignment #1

Mon, 2 Sep, 2031

You shall develop, test, and deliver a simple hexdump program, ‘xsd’.

The simple hexdump program will open a regular type file (binary or text/ASCII, read every byte in the file and write both the ASCII hex value for that byte as well as it’s printable (human-readable) character (characters, digits, symbols) to standard output. For bytes forming non-printable characters, print a ‘.’ character (a dot/period character, i.e. hex value 2E).

The output should be formatted:
<address> <B0B1> <B2B3> <B4B5> <B6B7> <B8B9> <BABB> <BCBD> <BEBF> 123456789ABCDEF
-- Where b0b1 means Byte #0, Byte #1, etc; the 1

Example hex output:
0003540: 0504 0675 6e73 6967 6e65 6420 6368 6172 ...unsigned char
0003550: 0008 0107 0000 0131 0675 6e73 6967 6e65 ....1.unsigne

Your program shall also provide an option to print in binary instead of hex. If binray option is selected, then the output format shall be:
<address> bbbbbbbb bbbbbbbb bbbbbbbb bbbbbbbb bbbbbbbb bbbbbbbb 123456
-- where b means bit; each line has 6 octets with a space in between each octet

e.g. (output format fragment sample):
0003540: 00000101 00000100 00000110 01110101 01101110 01110011 ...uns
0003546: 01101001 01100111 01101110 01100101 01100100 00100000 igned

Create directory ~/a1 by hand on rohan in your class account
Create C/C++ source file(s), an include file, a Makefile, and a README file, put them into ~/a1.

Note, your hexdump program will only open regular file type (binary or text/ASCII), you are not required to handle other file types or errors encountered if the user attempted to run your hexdump program on other file types.

Suggestion – become familiar with the xxd program on rohan; your simple hexdumper program is similar to running xxd with no options or with the ‘b’ (binary) option.

ADDITIONAL REQUIREMENTS:
README file - you shall create a README file; consult the instructions for README file content on the course Blackboard. Also, your source files SHALL CONTAIN sufficient comments for making the source easy to read. Points will be taken off for poorly (or non) commented source or inadequate README file documentation.

Compiler and Make (and Makefile) – You shall use C/C++ (cc/gcc/CC/g++) and use make to compile your program for this assignment; you will need to create a Makefile for your project, consult the example Makefile(s) on the course Blackboard. Name the executable, ‘xsd’ (hex simple dumper).

TURNING IN YOUR WORK:
The assignment is due at 1730, Monday, 23 September 2013

When ready to turn this in, make sure your files are ready for testing on rohan and turnin your README file using Blackboard.