cs3843p1Pgm Hex Dump (40 points)

In C, create a function int **hexDump**(char \*psbBuffer, int iBufferLength, int iBytesPerLine) which prints (to stdout) the contents of the specified buffer in both printable characters (where possible) and hexadecimal. Your dump must be easy to read by human eyes and **formatted as shown at the bottom.**

Parameters:

i char \*psbBuffer a buffer which can contain printable and binary characters.

i int iBufferLength the length of sbBuffer in bytes. You may assume that this must be less than 4800 bytes.

i int iBytesPerLine the number of bytes to print per line. This value must be at least 10 and at most 50.

Returns (functional result):

-1 invalid parameter

n number of lines printed including suppressed lines (see below)

Notes:

1. The output must be broken into possibly many lines based on the iBufferLength and iBytesPerLine parameters. For example, if the buffer is 200 bytes and the iBytesPerLine is 10 bytes/line, it will logically print 20 lines.

2. Each printed line must include its beginning offset (relative to 0) shown in hex, printable characters, and corresponding hexadecimal characters. If a particular byte isn't printable, display a period. The specific format is shown at the bottom. Note that a space is printed after every four characters of data.

3. You will be provided with a driver (cs3843p1Driver.c), an include file (cs3843p1.h), and sample data (cs3843p1Input.txt). Do not modify the driver without my permission.

4. Your code must be placed in a separate .c file named cs3843p1.c and it must be coded **based on my programming standards**.

5. Compiling

* Compile the driver using

gcc -g -c -o cs3843p1Driver.o cs3843p1Driver.c

* Compile your code using

gcc -g -c -o cs3843p1.o cs3843p1.c

* Link them together using:

gcc -g -o p1 cs3843p1Driver.o cs3843p1.o

6. Compile and execute your program using a fox server.

7. Turn in a zip file named *abc123*.zip (of course using your abc123) which contains:

* + cs3843p1.c – your C file containing hexDump
  + p1Out.txt – your generated output

8. You must not use any other website for this assignment. Scholastic dishonesty will NOT be tolerated and will result in a zero on this assignment, possibly an F in this course, and possibly expulsion from UTSA.

Extra credit (10 points + 200 / N) - Suppressing lines of null bytes:

1. Extra credit is only given to programs turned in on time.

2. If a line contains only 0x00 bytes, suppress its display and show its offset and simply print "suppressed - all zero".

3. If there are multiple adjacent lines of only 0x00 bytes, suppress them and show only one line (indicating "suppressed - all zero"), making it clear which offsets or lines were suppressed. Also, specify how many lines were suppressed. Example:

00A0 thru 01A3 (13 lines) suppressed - all zero

4. If it is easier, you can show one suppressed line of all zeros in the same manner as #3.

5. N = number of people who meet all requirements.

Carriage Return in Data File:

If the input data file contains carriage returns, it can cause issues for the driver. To check if it has carriage returns, use the following

cat *filename* | od -c

It will show "\r" for carriage returns. To remove them, please see the Set Up section of my website.

Dump Output Format for each line (except when suppressed):

* Show a 4 digit offset (relative to zero), followed by printable text. Each character is followed by a space for readability. An extra space is included between each four characters printed. If a character isn't printable, show a dot.
* Show a line representing the hex values. It should be indented 5 characters so that the values line up with the corresponding printable values. Print pairs of characters printed as hex values. There should be one space printed after avery four characters.

Sample Output (partial):

>>> CUSTOMER 1

>>>CREC 0 petem@xyz.net,Pete Moss

>>>AREC 0 123 Boggy Lane,New Orleans,LA,70112

hexDump of 143 bytes beginning at 0x7fff6d5c3e60

0000 p e t e m @ x y z . n e t . . . . . . .

70657465 6D407879 7A2E6E65 74000000 00000000

0014 thru 0027 (1 lines) suppressed - all zero

0028 . . . . . . . . . . . P e t e M o s s

00000000 00000000 00000050 65746520 4D6F7373

003C thru 004F (1 lines) suppressed - all zero

0050 . . 1 2 3 B o g g y L a n e . . . .

00003132 3320426F 67677920 4C616E65 00000000

0064 . . . . . . . . . . . . . N e w O r l

00000000 00000000 00000000 004E6577 204F726C

0078 e a n s . . . . . . . . . . L A . 7 0 1

65616E73 00000000 00000000 00004C41 00373031

008C 1 2 .

313200

>>> hexDump returned 8 lines

\* Show 6 customer records, but only 0, 3, and 4 are populated

>>> CUSTOMER 6

>>>CREC 3 pcorn@abc.net,Pop Corn

>>>AREC 3 456 Kernel,San Antonio,TX,78210

>>>CREC 4 pennyl@xyz.net,Penny Loafer

>>>AREC 4 789 Walking St,Philadelphia,PA,19102

hexDump of 858 bytes beginning at 0x7fff6d5c3e60

0000 p e t e m @ x y z . n e t . . . . . . .

70657465 6D407879 7A2E6E65 74000000 00000000

0014 thru 0027 (1 lines) suppressed - all zero

0028 . . . . . . . . . . . P e t e M o s s

00000000 00000000 00000050 65746520 4D6F7373

003C thru 004F (1 lines) suppressed - all zero

0050 . . 1 2 3 B o g g y L a n e . . . .

00003132 3320426F 67677920 4C616E65 00000000

0064 . . . . . . . . . . . . . N e w O r l

00000000 00000000 00000000 004E6577 204F726C

0078 e a n s . . . . . . . . . . L A . 7 0 1

65616E73 00000000 00000000 00004C41 00373031

008C 1 2 . . . . . . . . . . . . . . . . . .

31320000 00000000 00000000 00000000 00000000

00A0 thru 01A3 (13 lines) suppressed - all zero

01A4 . . . . . . . . . p c o r n @ a b c . n

00000000 00000000 0070636F 726E4061 62632E6E

01B8 e t . . . . . . . . . . . . . . . . . .

65740000 00000000 00000000 00000000 00000000

01CC thru 01DF (1 lines) suppressed - all zero

01E0 P o p C o r n . . . . . . . . . . . .

506F7020 436F726E 00000000 00000000 00000000

01F4 . . . . . . . . . . . 4 5 6 K e r n e

00000000 00000000 00000034 3536204B 65726E65

0208 l . . . . . . . . . . . . . . . . . . .

6C000000 00000000 00000000 00000000 00000000

021C . . S a n A n t o n i o . . . . . . .

00005361 6E20416E 746F6E69 6F000000 00000000

0230 . . . T X . 7 8 2 1 0 . p e n n y l @ x

00000054 58003738 32313000 70656E6E 796C4078

0244 y z . n e t . . . . . . . . . . . . . .

797A2E6E 65740000 00000000 00000000 00000000

0258 thru 026B (1 lines) suppressed - all zero

026C . . . P e n n y L o a f e r . . . . .

00000050 656E6E79 204C6F61 66657200 00000000

0280 . . . . . . . . . . . . . . 7 8 9 W a

00000000 00000000 00000000 00003738 39205761

0294 l k i n g S t . . . . . . . . . . . .

6C6B696E 67205374 00000000 00000000 00000000

02A8 . . . . . P h i l a d e l p h i a . . .

00000000 00506869 6C616465 6C706869 61000000

02BC . . . . . . P A . 1 9 1 0 2 . . . . . .

00000000 00005041 00313931 30320000 00000000

02D0 thru 0359 (7 lines) suppressed - all zero

>>> hexDump returned 43 lines