Coding Problem "Symcode"

Introduction

Symcode is a binary-to-txt encoding scheme, representing binary data as ascii strings.

Symcode uses a radix-8 representation, with each character representing 3 bits of data.

The Symcode index table is:

Index	0	1	2	3	4	5	6	7
Code	s	y	m	a	n	t	e	c

Please write a program that reads a given input file, and produces an output file for which each line of output is the Symcoded representation of the corresponding line of input.

A simple example

The following stanza is from Lewis Carrol's "Jabberwocky."

> *'Twas brillig, and the slithy toves*
> *Did gyre and gimble in the wabe:*
> *All mimsy were the borogoves,*
> *And the mome raths outgrabe.*

In the above quote, the word "gimble" is represented by the hexadecimal ascii string: `0x67 0x69 0x6d 0x62 0x6c 0x65`

Sub-dividing the bytes into 3-bit blocks, then applying the encoding from the above index table will Symcode the string thusly:

Text	g			i			m			b			l			e		
Ascii (hex)	0x67			0x69			0x6d			0x62			0x6c			0x65		
Bits	0 1 1	0 0 1	1 1 0	1 0 0	1 0 1	1 0 1	1 0 1	1 0 0	1 0 1	1 0 0	0 1 0	1 0 0	0 1 1	0 1 1	0 0 1	0 1 1	0 0 1	1 0 1
Index	3	1	6	6	4	5	5	5	3	0	4	6	6	1	4	5		
Symcoded	a	y	e	e	n	t	t	t	a	s	n	e	e	y	n	t		

Padding

You may have noticed the example above conveniently fits into 24-bit blocks (divisible by 3 and 8), and hence required no padding.

Symcode follows the same padding rules as base64 encoding; and we pad the trailing zeroes with dollar signs '$'

The examples for "wabe" and "mimsy" follow, respectively:

Text	w			a			b			e			padding			padding		
Ascii (hex)	0x77			0x61			0x62			0x65			0x00			0x00		
Bits	0 1 1	1 0 1	1 1 0	1 0 0	0 0 1	0 1 1	0 0 0	1 0 1	0 0 1	0 1 1	0 0 1	0 1 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
Index	3	5	6	6	0	5	4	2	3	1	2	pad	pad	pad	pad	pad		
Symcoded	a	t	e	e	s	t	n	m	a	y	m	$	$	$	$	$		

Text	m			i			m			s			y			padding		
Ascii (hex)	0x6d			0x69			0x6d			0x73			0x79			0x00		
Bits	0 1 1	0 1 1	0 1 0	1 0 0	1 0 1	1 0 1	1 0 1	1 0 0	1 0 1	1 0 0	1 1 1	0 0 1	1 1 0	1 1 1	1 0 0	1 0 0	0 0 0	0 0 0
Index	3	3	2	6	4	5	5	5	3	4	6	7	4	4	pad	pad		
Symcoded	a	a	m	e	n	t	t	t	a	n	e	c	n	n	$	$		

Input

The test input file can be downloaded here.

Each line contains an input string which must be Symcoded.

Each input string:

- will be composed of ascii characters only
- should exclude trailing and preceding whitespace
- If the corresponding input line contains only whitespace, print an empty line.

Output

Your program should produce an output file you can test by uploading here:

File to upload: Browse... No file selected.

Upload File

Each line should contain:

- The Symcoded data from the corresponding line of input.
- Padding for purposes of this coding exercise is mandatory.

Sample

Input:

```
MACBETH

ACT I

SCENE I A desert place.

[Thunder and lightning. Enter three Witches]

First Witch When shall we three meet again
In thunder, lightning, or in rain?

Second Witch When the hurlyburly's done,
When the battle's lost and won.

Third Witch That will be ere the set of sun.
```

Output:

```
mamnstsamsnnmtmnmms$$$$$

msmnytmnyssnnn$$

mnenytstmannmnnsmmmsntsyyssemyntaneemtematsmsyesaasestnaaymmcs$$

meetmytsatmecynnaymcysnsasmecynnysseeytyayeenyenaanentteayemcsnsmymecyenaymcysnsatsenyemaymemnnsmteentenaseenyntan

mynentemanecmsnsmteentenaseensyymteenyntaanmsyeaamsesttnaasmsyecaymmsyenamscyyntaymmsyttaymemtenyssestncasmentte
mmmecsnsatsenyetaanemyntannmesnsaasentncamscmyteammecyncyasmsytcannmsytyaanmsyemasmentteyce$$$$$

mneemtnaaaeecynnysstattyatseyttssmmtattsaymecsnsatsenyntyssenyetanneeycyasncmtemaascnnncanemsynnaaeecyntyas$$$$$
mteenyntaanmsyenamsemnnsasnestenatseeyntyyecynnsaasecteaatsmsynyaanemsnsateectteyan$$$$$

mtsenytyannemsnsmteentenaseensyymtsenynyatsmsyecammeeytnysseyyntyssemtemaymmsyenamsemnnsaneemtenyssectneysscytetaa
```

We will evaluate your solution for:

- Correctness - Test your output using the link above. Include the correct output with your code.
- Cleanliness - Your code should be readable, maintainable and production ready.

Submitting Your Solution

If your test output successfully passes

- Zip up your code (source only, without binaries).
- Include your output.
- Submit using the form below.

After you submit your code and output, someone from our team will be contacting you.

Technical Issues

Please report any problems you encounter with this site to andrew_chang@symantec.com

Good luck!