

Binary Decoder

Write a Python program that can decode various binary encoded messages. This is a group programming assignment (i.e., **only one submission per team is needed**).

Notes and Requirements:

- Submit your source code only (I will provide my own binary encoded messages to test with);
- Read the binary encoded message from `stdin`;
- Send the decoded output to `stdout`;
- Binary input may either be 7- or 8-bit ASCII (which you can automatically detect – or just output both);
- Original ASCII input will only contain “printable” characters;
- Therefore, whitespace characters (e.g., space, tab, carriage return, linefeed, etc) are acceptable (and you should replicate them in the output); and
- To make this even more interesting, backspaces may also be included in the original ASCII input (which, of course, you should “replicate” in the output)!

Please, no GUIs. Make this a command line application without frills that I can execute at the command line as illustrated below. Here are several runs of my program on various inputs:

binary1.txt

```
100100011001011101100110110011011110100000101011111011111110010110110011001
000100001
```

```
at@latech:~$ python Binary.py < binary1.txt
Hello World!
```

binary2.txt

```
010010000110010101101100011011000110111100100000010101110110111101110010011
011000110010000100001
```

```
at@latech:~$ python Binary.py < binary2.txt
Hello World!
```

```
tricky.txt
11101011110011110010111100100111010111001011011111101111110100010000011100
001100001111001111100110111010110000111100111110100111001011011111101110110
1111110110111110010001000110010111110010
```

```
at@latech:~$ python Binary.py < tricky.txt
user:root pass:astronomer
```

Let's look at the last example a bit more closely:

1110101	1110011	1100101	1110010	0111010	1110010	1101111	1101111	1110100
117	115	101	114	58	114	111	111	116
u	s	e	r	:	r	o	o	t
0100000	1110000	1100001	1110011	1110011	0111010	1100001	1110011	1110100
32	112	97	115	115	58	97	115	116
[sp]	p	a	s	s	:	a	s	t
1110010	1101111	1101110	1101111	1101101	1111001	0001000	1100101	1110010
114	111	110	111	109	121	8	101	114
r	o	n	o	m	y	[bs]	e	r

First, notice that it is encoded in 7-bit ASCII. Second, it contains a backspace (ASCII 8). This is rather unfortunate. It's as if someone accidentally typed "astronomy" as a password, and fixed it by backspacing over the "y" and adding "er" to change it to "astronomer." Imagine such a sly trick during Cyber Storm...