4879   Old Fashioned Typesetting

In Olden Days, before digital typesetting (before Babbage, even), typesetting was an art, practiced by highly skilled craftsmen. Certain character combinations, such as a-e or f-i were typeset as a single character, called a *ligature*, to save space and to make the characters look better together on the printed page (the ligatures for a-e and f-i were 'æ' and 'fi', respectively; the table below lists all possible ligature combinations).

In addition, there were two different versions of the lowercase letter 's': the "long s" (ß) and the "short s". Only the short s is used today. The rules for when to use which version are odd, but straightforward:

1. Short s is used at the end of a word, or before punctuation within a word, such as a hyphen or apostrophe: *programs*, *success*, *hocus-pocus*, *revis'd*. (programs, ßucceßs, hocus-pocus, revis'd)

2. Short s is used before the letters 'f', 'b', or 'k': *transfer*, *husband*, *ask*, *successful*. (transfer, husband, ask, ßucceßsful)

3. Long s is used everywhere else, *except...*

4. It is possible that a compound word consists of a word ending in a double s followed by a word beginning with s (this is the only situation where the sequence "sss" occurs in English text). In this case, the middle s is set short and the other two are set long: *crossstitch*, *crossstaff*. (croßsßtitch, croßsßaff)

Input Sequence	Symbol	Output Code
AE	Æ	[AE]
ae	æ	[ae]
OE	Œ	[OE]
oe	œ	[oe]
ct	ct	[ct]
ff	ff	[ff]
fi	fi	[fi]
fl	fl	[fl]
ffi	ffi	[ffi]
ffl	ffl	[ffl]
s (short)	s	s
s (long)	ſ	[longs]
si	ſi	[longsi]
sh	ſh	[longsh]
sl	ſl	[longsl]
ss	ſſ	[longss]
st	ſt	[longst]
ssi	ſſi	[longssi]

Note that a "word" is not the same thing as an "identifier." While identifiers can contain punctuation marks such as '_' or '$', words can contain only letters (at least as far as typographers are concerned). Therefore, identifiers like "radius3" and " adios_amigo" would be typeset as "radius3" and "adios_amigo," respectively, rather than "radiuß3" and "adioß_amigo."

Input

The first line of input contains a single integer P $(1 \leq P \leq 1000)$, which is the number of data sets that follow. Each data set consists of a single line containing the data set number, followed by a space, followed by a string of no more than 1000 characters.

Output

For each data set, print the data set number, a space, and the input string, with the appropriate ligature and "long s" codes substituted into the string.

The table on the above shows the code strings to use for each symbol or ligature (note that the short s remains unchanged on output; note also that 'Æ' and 'Œ' are the *only* uppercase ligatures):

Note that the rules for the use of long and short s can combine with these ligatures in interesting (and not always obvious) ways. For example, the input word 'crossstitch' becomes 'cro[longs]s[longst]itch', not 'cro[longs]s[longs]titch'.

Sample Input

```
3
1 Last night, we went to see
2 "Oedipus Rex" at the
3 AEgyptian's theater.
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Sample Output

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1 La[longst] night, we went to [longs]ee
2 "[OE]dipus Rex" at the
3 [AE]gyptian's theater.
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