Problem M. Mirror Brackets

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	64 megabytes

Let's remind you what a correct bracket sequence (CBS) is.

- An empty string is CBS.

- If s is CBS, then (s) and $[s]$ also are CBS.

- If s and t are CBS, then st also is CBS.

- If a sequence can't be obtained applying the rules given above, then it is not a CBS.

Vasya wrote a correct bracket sequence consisting of brackets "(", ")", "[" and "]". After that Vasya added to some places of the sequence characters "b", "d", "o", "p", "q" and "x". As a result, Vasya got some string z.

Now Vasya performs the following operations:

If z has a substring of the form (s) (there are no brackets in s), then Vasya replaces it with s string's mirror reflection relative to vertical axis. If z contains a substring of the form $[t]$ (there are no brackets in t as well), then Vasya replaces it with t string's mirror reflection relative to horizontal axis. For example, substring "(qbpoxd)" will be replaced with "bxoqdp", and substring "[qbpoxd]" will be replaced with "dpboxq".

Vasya performs operations until there are no brackets left in the string.

Calculate by the given z string what result Vasya will have in the end.

Input

The only line contains the z string whose length does not exceed 10^5 characters, consisting of characters "(", ")","[", "]", "b", "d", "o", "p", "q" and "x". It is guaranteed that all the brackets in z organize a correct bracket sequence. It is also guaranteed that the input data contain at least one letter.

Output

Print the string Vasya will get in the end.

Examples

standard input	standard output
(qbpoxd)[qbpoxd]	bxoqdpdpboxq
d[xd(bx)op]q()[]xx	dxqxqobqxx