

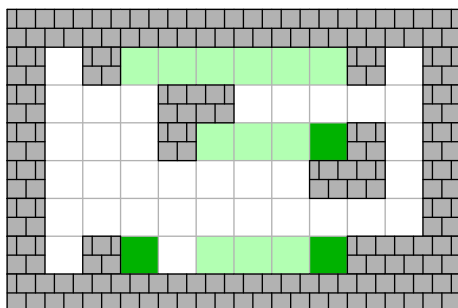
Yum-Yum

Problem description

We look at a world on a rectangular mesh that consists of walls and free space. The outer rectangle is a wall with no openings. Some inner fields are *exits*. You can place a *Yum-yum* on some field and it will behave as follows: It chooses one of the four directions randomly and moves in that direction until it hits a wall or finds an exit and leaves. If it hits a wall it again chooses a random direction and moves in that direction and so on.

We call a field *safe* if it is neither a wall nor an exit and a Yum-yum placed there will reach an exit with probability one.

Here is an artistic drawing of such a world, where the exits are dark green and safe fields light green:



The maximum size of such a world is 50×50 . Your task is to read in a world, compute the safe fields, and output the world with the safe fields marked. The following encoding is used: '#' (wall), '.' (empty field), 'E' (exit), ':' (safe field). An $n \times m$ world is encoded by n lines consisting of length m strings of such symbols.

Sample input/output

Input	Output
#####	#####
# # # #	# #::: # #
# ## #	# ## #
# # E# #	# #:E# #
# ## #	# ## #
# #	# #
# #E E###	# #E ::E###
#####	#####