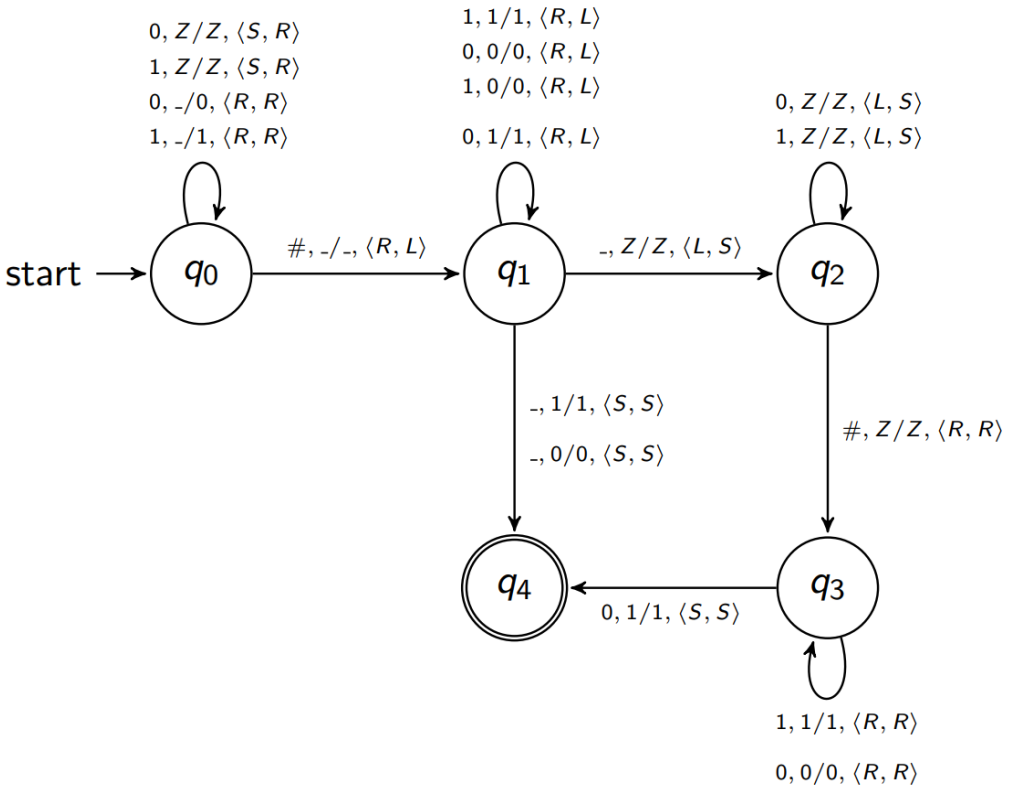
Implement a Turing machine according to the graphical representation:



Expected input: Two non-empty binary strings with no leading zeroes, separated by "#". A leading zero is any 0 digit that comes before the first nonzero digit, if any, in a number string.

When your program receives a valid input from `input.txt`, it should output the `output.txt` containing the list of configurations (see configurations format) followed by "YES"/"NO": "YES", if a Turing machine accepts the string from the input file and "NO" otherwise. It the input is invalid, `output.txt` should contain "Invalid input".

Examples of valid input strings: "0#111", "1011101#1011100", "10101#11"

Examples of invalid input strings: "11#0101#1", "00011#1010"

Configurations format

TM configurations should be printed each on a new line in the form:
"q", "x^y", "a^β",
where q – state of the control device,
x^y - string and the head position on the input tape (^ stands for ↑ in the course material),
a^β - string and the head position on the memory tape.

Example 1	Example 2
input.txt *1100#1001* output.txt *q0, ^1100#1001, ^Z* *q0, ^1100#1001, Z^* *q0, 1^100#1001, Z1^* *q0, 11^00#1001, Z11^* *q0, 110^0#1001, Z110^* *q0, 1100^#1001, Z1100^* *q1, 1100#^1001, Z110^0* *q1, 1100#1^001, Z11^00* *q1, 1100#10^01, Z1^100* *q1, 1100#100^1, Z^1100* *q1, 1100#1001^, ^Z1100* *q2, 1100#100^1, ^Z1100* *q2, 1100#10^01, ^Z1100* *q2, 1100#1^001, ^Z1100* *q2, 1100#^1001, ^Z1100* *q2, 1100^#1001, ^Z1100* *q3, 1100#^1001, Z^1100* *q3, 1100#1^001, Z1^100* *q4, 1100#1^001, Z1^100* *YES*	input.txt *100#101* output.txt *q0, ^100#101, ^Z* *q0, ^100#101, Z^* *q0, 1^00#101, Z1^* *q0, 10^0#101, Z10^* *q0, 100^#101, Z100^* *q1, 100#^101, Z10^0* *q1, 100#1^01, Z1^00* *q1, 100#10^1, Z^100* *q1, 100#101^, ^Z100* *q2, 100#10^1, ^Z100* *q2, 100#1^01, ^Z100* *q2, 100#^101, ^Z100* *q2, 100^#101, ^Z100* *q3, 100#^101, Z^100* *q3, 100#1^01, Z1^00* *q3, 100#10^1, Z10^0* *q3, 100#10^1, Z10^0* *NO*