5. Write a regular expression for all strings of 0s and 1s in which at least one copy of the substring 01 occurs before any copy of the substring 10 occurs in the string. If there is no occurrence of the substring 10 then there need not be any copy of the substring 01.

Answer:

\[ 1^* + 0(0 + 1)^* \]

6. Write a regular expression for all strings of 0s and 1s in which there is an even number of 0s between any two 1s.

Answer:

\[ 0^*(1^*(00)^*)^*0^* \]