Here is a Turing Machine:

\[ Q = \{ A, B, C, D \} \]
\[ \Sigma = \{ 0, 1 \} \]
\[ \Gamma = \{ 0, 1, _ \} \]
\[ \delta = \]
\[ \delta ( A, 0 ) = ( B, 1, \text{R} ) \]
\[ \delta ( A, 1 ) = ( A, 1, \text{R} ) \]
\[ \delta ( A, \_ ) = ( C, \_, \text{L} ) \]
\[ \delta ( B, 0 ) = ( D, 0, \text{L} ) \]
\[ \delta ( B, 1 ) = ( A, 0, \text{R} ) \]
\[ \delta ( B, \_ ) = ( D, \_, \text{L} ) \]

\[ q_0 = A \]
\[ q_{\text{ACCEPT}} = C \]
\[ q_{\text{REJECT}} = D \]

**Problem 1.** Convert this into an instance of the PCP.

**Problem 2.** Show that the string “01” is in the language recognized by this TM by showing a solution to your instance of the PCP.