Problem 1
Design a Turing machine that can decide the following language (i.e. accept strings that are in the language and reject strings that are not):

\[ L = \{ 0^n1^n \mid n > 0 \} \]

Problem 2
Prove that it is not possible to construct a Turing machine to decide the following language:

\[ L = \{ \langle M \rangle \mid M \text{ is a TM that prints a number greater than one half} \} \]

Problem 3
Prove that it is not possible to construct a Turing machine to decide the following language:

\[ L = \{ \langle M \rangle \mid M \text{ is a TM that will not print 0’s and 1’s in combination} \} \]