1. Consider the Turing machine below

```
TM    Q         {0, 1, H, Q}
      Sigma  {a, b}
      Gamma  {a, b, ^}
      Delta  0 ^ ->   (^, S, H)
             0 a ->   (a, R, 0)
             0 b ->   (b, R, 1)
             1 b ->   (b, R, 1)
             1 ^ ->   (^, S, H)
             1 a ->   (a, R, Q)
      q0       0
      Accept H
      Reject Q
      Blank   ^
```
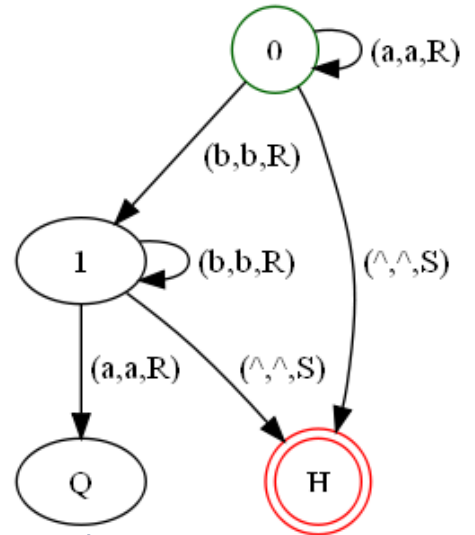

Note where Sipser labels his transitions
0,1 →R, we write (0,1,R). We also use the variant that allows not move the tape head. Legal moves are L,R,S

    A. Describe in English the language accepted
    B. Give the initial configuration
    C. Pick a string not in the language and show that either a sequence of related configurations gets stuck, or ends in the reject state.
    D. Pick a string in the language and show that a sequence of related configurations ends in the accept state.

2. Give a Turing machine for the english language descriptions below over the alphabet {0,1}

    A. { w | w contains an equal number of 1's and 0's }
    B. { w | w contains twice as many 0's ans 1's }