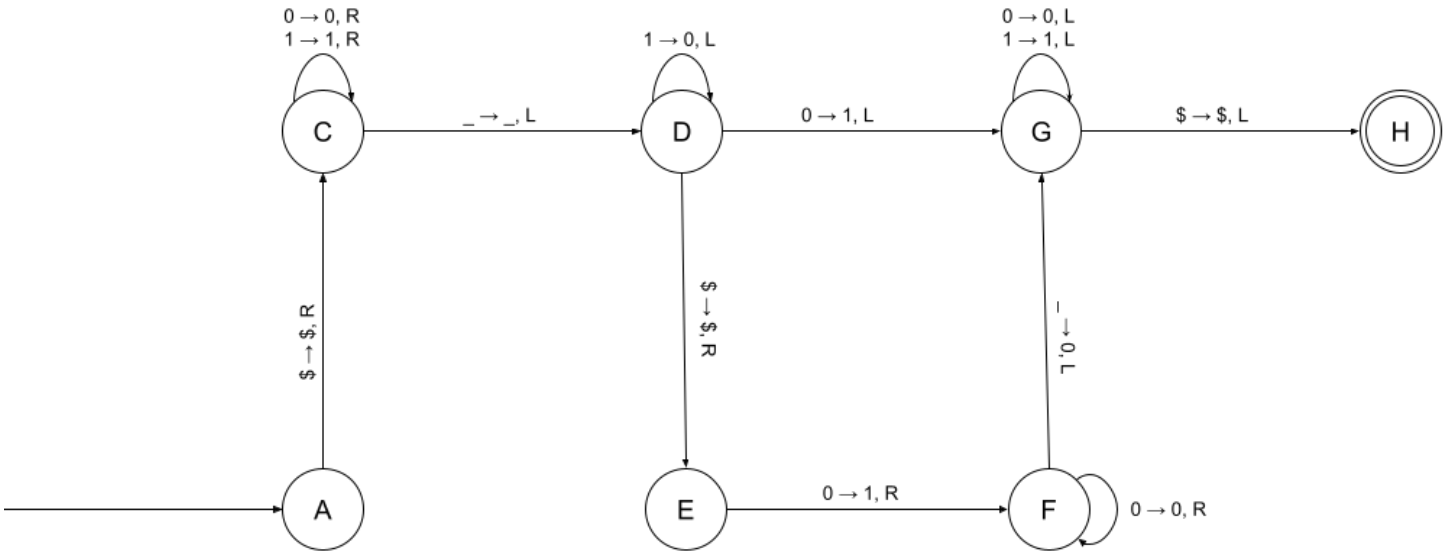
b



We assume that, the tape contents will initially be **$** followed by an integer N > 1 written in base-2 (binary), and assume that the first symbol of N is 1. The tape head is initially pointingto the $## Pseudocode:

Pseudocode:

1. If the current symbol is **$** then move right. It corresponds transitioning from state ***A*** to ***C***.
2. Move right until the current square is non **0** or non **1**. [state ***C***]
3. If the current symbol is **_** then move left else reject. This corresponds to transition from state ***C*** to state ***D***.
4. Move left until the current square is non **1** and replacing each **1** with **0**. [state ***D***]
5. If current square symbol is **0** replace it with **1** and move left, and skip to step **9**. This corresponds to transition from state ***D*** to state ***G***,
   Else if current square symbol is **$** move right, this corresponds to transition from state ***D*** to state ***E***.
   Else reject.
6. If the current symbol is **0** then replace it with 1 and move right else reject. This corresponds to transition from state ***E*** to state ***F***.
7. Move right until the current square symbol is non **0**. [State ***F***]
8. If the current symbol is **_** then replace it with symbol **0**. This corresponds to transition from state ***F*** to state ***G***.
9. Move left until the current square is non **0** or non **1**. [state ***G***]

10. If the current symbol is **$** then move to left and **accept**. This corresponds to transition from state ***G*** to final accepting state ***H***.