1. For a language $M$, define $M_{2022}$ as the set of all strings in $M$ of length exactly 2022. State whether the following are true or false: (No justification required.)

   (a) If $M$ is regular, then so is $M_{2022}$.

      TRUE

   (b) If $M_{2022}$ is regular, then so is $M$.

      FALSE

2. Given a nonempty string, the slur of the string is obtained by duplicating the first letter. For example, the slur of TIGER is TTIGER. The slur of a language is the slurs of all its strings. Show that the regular languages are closed under slur’ing, by providing an algorithm to in general convert an FA for a language $L$ to an FA for the slur of $L$.

   Create a new start state.
   For each transition out of old start state, add new state to capture duplicated letter.

   E.g.

   ![Diagram of FA for a language with slur]