Show that if \( L \) is a regular language, then \( M \) is also a regular language, where \( M \) is the set of prefixes of strings in \( L \). That is,

\[
M = \{ x : \text{there exists } y \in L, x \text{ is a prefix of } y \}.
\]

Rules:

1. Your answer must be turned in by the next class.

2. You get one point for homework on it, that is, one-tenth of the value of a homework assignment, if your solution is correct and well written.

3. There is little or no partial credit.

4. If there are too many submissions for me to grade easily, no one gets any credit.

5. You may work in groups of up to five people. If you do so, please turn in only one paper for the group, with everyone’s name on it.

6. Solutions will be reviewed the class after they are turned in.