1. Show how to use \textit{extend} (from the string matching notes) to pre-compute all the values in the array $\text{Prefix}[i]$—that is, to do the job of CLRS3’s COMPUTE-PREFIX-FUNCTION on page 1006. Prove that your algorithm terminates and is correct. Analyze the amount of time required.

2. \textbf{PhD Qualifying Exam Section Problem 16}. Professor Reingold claims that if we memoize the function \textit{extend} (rather than \textit{prefix}) you are constructing the FSA rather than the shift function. Is this claim correct? Explain.