1. **Memories of the past**
   We say that a directed graph is strongly connected if every pair of nodes is connected by a directed path in each direction. Let

   \[ \text{Strongly-Connected} = \{ \langle G \rangle \mid G \text{ is a strongly connected graph} \} \]

   Show that \text{Strongly-Connected} is NL-complete.

2. **Its hard to be concise**
   We say that two boolean formulas are equivalent if they have the same set of variables and are true on the same assignments. A formula is said to be minimal if no shorter formula is equivalent to it. Let

   \[ \text{MIN - FORMULA} = \{ \varphi \mid \varphi \text{ is a minimal boolean formula} \} \]

   (a) Show that \text{MIN - FORMULA} ∈ PSPACE.

   (b) Explain why the following argument fails to show that \text{MIN - FORMULA} ∈ coNP:

       If \( \varphi \notin \text{MIN - FORMULA} \), then \( \varphi \) has a smaller equivalent formula. An NTM can verify that \( \varphi \in \text{MIN - FORMULA} \) by guessing that formula.

3. **A (NL) hard problem on DFAs!**
   Prove that \( E_{\text{DFA}} \) is NL-complete.

   *Hint:* You may use the fact that coNL = NL.