Following are a few guidelines that will be helpful in presenting your solutions neatly and verifying them:

- When trying to present a particular DFA/NFA, the best and easiest way is to draw the state diagram.
- If you present a DFA, note that you MUST specify the transition function for every state on every possible input of the alphabet.
- It is important to always consider the fate of the empty string $\epsilon$ - your language/state machine must take care of whether or not the empty string is to be accepted.
- When providing a counterexample, try to explicitly state which DFA/NFA is a counterexample - as well as give a string which certifies that this DFA/NFA is inappropriate.
- Once you have given a DFA/NFA/Regular expression to identify a language $L$, try to verify that it:
  - accepts every string that belongs to $L$
  - rejects every string that does not belong to $L$
  - correctly decides the fate of $\epsilon$ as well

Typically, an NFA that you suggest would accept all strings that belong to $L$, but it may also end up accepting strings that do not belong to $L$ - so try to pay attention while verifying that this is not the case.

- When you make non-trivial claims in your solutions, (such as “consider an NFA that accepts language $L$ and only has 1 final state”) they must be backed by some proof or justification - in this case, you must show that there exists an NFA that accepts the language $L$ and has only one final state - either by explicitly providing such an NFA or by showing a way to convert any NFA accepting $L$ to an equivalent NFA that uses only final state.

- For proofs by induction, clearly state your inductive hypothesis, the base case and the inductive step. Failing to provide either of these will lead to partial/ no score for your proof.

- Examples do not justify statements for an entire class of objects - for example, saying that “because 5 and 7 can be written as $6k \pm 1$ for some $k \in \mathbb{Z}$, every prime number can be written as $6k \pm 1$” is an INVALID way of proving/justifying that all prime numbers can be written as $6k \pm 1$. Examples never justify universal claims.

- However, examples may disprove universal claims. (as you have rightly demonstrated in relevant hw problems)

- Please make sure to refer to the third edition of the textbook for the homework problems - a few of you seem to be following a different edition leading to submissions that do not answer the expected questions.