Lecture #4: DFA Design and Verification — Part Two
What Will Happen During the Lecture

Remember... You Had Homework!

Students were asked to work through the following set of lecture notes before this lecture.

- Lecture Notes — "DFA Design and Verification — Part Two".

Once again, you may attend the lecture presentation if you have not worked through this material ahead of time — but it will not be repeated for you, and you might get a little bit lost, during the presentation, if you haven't worked through this.

Problem To Be Solved

Let $\Sigma = \{\mathtt{a}, \mathtt{b}\}$ and let $L \subseteq \Sigma^\star$ be the following language:

$$L = \{w \in \Sigma^\star \mid \omega \text{ ends with } \mathtt{abb}\}.$$

During the previous lecture, the design process introduced in the preparatory reading was used to try to design a deterministic finite automaton that has this language — working under the assumption that the only thing that a DFA would need to remember, when processing a given string, was whether that string belongs to this language.

This attempt failed — and we established that this is *not* enough information. We must figure out what other — or *additional* — information must be remembered, in order to continue.

During this lecture presentation, this exercise will be completed. If time permits the development of a *proof of the correctness of the designed DFA* will also be discussed — along with the difference between ***verification*** and ***testing*** — and why both are important.

If You Want To Get Started. . .

Try to solve this problem on your own, after completing the required reading (and looking at any supplements that might be helpful). Then you can compare your work to what the instructor is presenting.