Theory of Computation – Midterm Notes

1. What is a Regular Language?

A language is called regular if it can be recognized (accepted) by a Finite Automaton (DFA or NFA). Equivalently, a regular language can be described using a regular expression.

2. Given Language A

Alphabet $\Sigma = \{a, b\}$

A = { bba, abbba, bbba, abbabab }

Observation: A contains a finite number of strings (only 4 strings).

Theorem: Every finite language is regular.

Conclusion: Since A is finite, A is a regular language.

3. Regular Expression for A

Regular Expression: bba | abbba | bbba | abbabab

This regular expression shows that A is regular because it is a finite union of strings.