

8 Lecture - CS302

Important Subjective

- **What is Boolean algebra?**

Answer: Boolean algebra is a branch of mathematics that deals with logical operations and binary variables. It is used to represent and manipulate logical expressions.

- **What is a logic gate?**

Answer: A logic gate is a digital circuit that performs a logical operation on one or more binary inputs and produces a single binary output.

- **What is the difference between an AND gate and an OR gate?**

Answer: An AND gate produces an output of 1 only if all of its inputs are 1, while an OR gate produces an output of 1 if at least one of its inputs is 1.

- **What is a truth table?**

Answer: A truth table is a table that shows the output of a logic gate or circuit for all possible combinations of inputs.

- **What is the complement of a Boolean expression?**

Answer: The complement of a Boolean expression is the expression obtained by negating all of its variables.

- **What is the distributive law in Boolean algebra?**

Answer: The distributive law states that $A \cdot (B + C) = (A \cdot B) + (A \cdot C)$.

- **What is the purpose of logic simplification?**

Answer: The purpose of logic simplification is to reduce the complexity of a logical expression or circuit, leading to faster and more efficient computation.

- **What is a Karnaugh map?**

Answer: A Karnaugh map is a graphical tool used for simplifying Boolean expressions by grouping adjacent cells in a truth table that have the same output value.

- **What is the Quine-McCluskey algorithm?**

Answer: The Quine-McCluskey algorithm is a method used for logic simplification that involves finding all prime implicants of a Boolean expression and then selecting the minimum set of prime implicants that covers all the minterms.

- **What is the difference between a NAND gate and a NOR gate?**

Answer: A NAND gate produces an output of 0 only if all of its inputs are 1, while a NOR gate produces an output of 1 only if all of its inputs are 0.