

16 Lecture - CS302

Important Subjective

- 1. What is an ALU?**
Answer: An ALU is a digital circuit that performs arithmetic and logic operations on binary numbers.
- 2. What is the size of a 16-bit ALU?**
Answer: The size of a 16-bit ALU is 16 bits.
- 3. What are the two main types of operations performed by an ALU?**
Answer: The two main types of operations performed by an ALU are arithmetic and logical operations.
- 4. What are the sub-circuits of a 16-bit ALU?**
Answer: The sub-circuits of a 16-bit ALU include adders, subtractors, logical operators, and a carry-lookahead unit.
- 5. What is the function of the carry-lookahead unit?**
Answer: The function of the carry-lookahead unit is to generate the carry out signal for addition and subtraction operations.
- 6. What is the maximum number that can be represented by a 16-bit binary number?**
Answer: The maximum number that can be represented by a 16-bit binary number is 65535 ($2^{16} - 1$).
- 7. What is a bitwise operation?**
Answer: A bitwise operation is an operation that is performed on individual bits of binary numbers.
- 8. What is the purpose of logical operators in an ALU?**
Answer: The purpose of logical operators in an ALU is to perform logical operations, such as AND, OR, and XOR.
- 9. What is the difference between a half-adder and a full-adder?**
Answer: A half-adder can only add two single binary digits, while a full-adder can add three binary digits, including the carry-in bit.
- 10. What is the significance of the size of an ALU?**
Answer: The size of an ALU determines the maximum size of binary numbers that can be processed by the ALU. A larger ALU can process larger binary numbers.