21 Lecture - CS201

Important Subjective

1. **What is bit manipulation?**
   Answer: Bit manipulation is a programming technique used to manipulate individual bits or groups of bits within a binary sequence using logical and arithmetic operations.

2. **What are the benefits of using bit manipulation?**
   Answer: Using bit manipulation can help to optimize code, reduce memory usage, and improve performance in certain cases.

3. **What is the difference between bit-wise AND and bit-wise OR?**
   Answer: Bit-wise AND returns 1 only if both bits being compared are 1, while bit-wise OR returns 1 if either bit being compared is 1.

4. **What is bit-wise complement?**
   Answer: Bit-wise complement is a unary operator that inverts all the bits of a given value.

5. **What is the difference between left shift and right shift operations?**
   Answer: Left shift moves the bits of a value to the left by a specified number of positions, while right shift moves the bits to the right.

6. **What is a bitmask?**
   Answer: A bitmask is a binary sequence used to perform bitwise operations on a set of values.

7. **How can bit manipulation be used in encryption?**
   Answer: Bit manipulation can be used to encrypt data by performing logical and arithmetic operations on the binary values of the data.

8. **What are the risks associated with bit manipulation?**
   Answer: Bit manipulation can be error-prone and difficult to debug, and it can also lead to security vulnerabilities if not implemented properly.

9. **What is a flag variable?**
   Answer: A flag variable is a binary value used to represent a particular condition or state, and it can be manipulated using bit-wise operations.

10. **How can bit manipulation be used in optimizing code?**
    Answer: Bit manipulation can be used to replace complex arithmetic operations with simpler bitwise operations, reducing the number of instructions and improving performance.