**Task 1: Decimal to Binary Conversion**

In the **binary counting system**, we represent numbers using only two symbols: **0** and **1**. Each digit in the binary system is called a **bit**. To express decimal integers in binary, we convert them by multiplying each digit of the binary number by the corresponding power of 2.

**Example:**

Let’s convert the decimal number **42** to binary:

1. Start with **42**.
2. Divide by 2:
   * Quotient = 21, Remainder = 0 (rightmost bit)
3. Divide 21 by 2:
   * Quotient = 10, Remainder = 1
4. Repeat until the quotient becomes 0:
   * 10 ÷ 2 = 5 with a remainder of 0
   * 5 ÷ 2 = 2 with a remainder of 1
   * 2 ÷ 2 = 1 with a remainder of 0
   * 1 ÷ 2 = 0 with a remainder of 1 (leftmost bit)
5. Read the remainders: **101010** (binary representation of 42).

**Largest Decimal Number in a Single Byte (8 bits):**

A single byte has 8 bits. The largest decimal number we can express in a single byte is **255** (which is **11111111** in binary).

**Task 2: Simple Data Types in C++**

| **Data Type** | **Description** | **Operations** | **Examples** |
| --- | --- | --- | --- |
| int | Whole numbers | Arithmetic (addition, subtraction, multiplication, division), comparisons | int numStudents = 30; |
| char | Individual characters | Comparisons, printing | char firstInitial = 'J'; |
| bool | True or false values | Logical (AND, OR, NOT), comparisons | bool isRaining = true; |
| float | Single-precision floating-point values | Arithmetic, comparisons | float pi = 3.14; |
| double | Double-precision floating-point values | Same as float | double salary = 50000.75; |
| void | Represents a valueless entity | N/A | Used for functions |
| wchar\_t | Wide characters (extended character sets) | Comparisons, printing | wchar\_t specialSymbol = L'Ω'; |