Assessment 2 **Total time: 30 min**

Objective:

Implement operator overloading in C++ to perform **arithmetic, comparison, and input/output operations** on an Energy class representing energy values in different units (Joules, Calories, and Kilowatt-hours).

Description

1. Define a Class Energy *(CLO 2 – 2 Marks)*

- Create a class with attributes for:
    - **Joules (J)** → Base unit.
    - **Calories (cal)** → 1 cal = 4.184 Joules.
    - **Kilowatt-hours (kWh)** → 1 kWh = 3.6 × 10 Joules.
- Implement a **normalization method** to ensure correct unit conversion.

2. Overload the Following Operators *(CLO 5 – 5 Marks)*

Operator	**Functionality**
+, -	Add/Subtract two energy values (handles unit conversion).
*, /	Multiply/Divide energy by a **floating-point** number.
==, !=, >, <	Compare two energy values in **Joules**.
+=, -=	Update energy values in-place.
++ (Prefix & Postfix)	Increase energy value by **10 Joules** (default increment).
-- (Prefix & Postfix)	Decrease energy value by **10 Joules** (default decrement).

3. Demonstrate Functionality *(CLO 3 – 3 Marks)*

- **Create multiple Energy objects** with different values (Joules, Calories, kWh, eV).
- **Perform all arithmetic operations** (+, -, *, /).
- **Compare two Energy objects** (==, <, >).
- **Use dynamic memory allocation (new, delete)** and access members using the arrow (->) operator.