The formulas:

1. Daily number of carbohydrates = (x1 * C) / (4) when 0.45 <= x1 <= 0.65 .
2. Daily number of sugars = (x2 * C) / (4) when 0<= x2 <= 0.1 .
3. Daily number of fats = (x3 * C) / (9) when 0.25 <= x3 <= 0.35 .
4. Daily number of protein = (x4 * C) / (4) when 0.1 <= x4 <= 0.35 .

I have the next data on a man:

1. Want to lose weight, keep weight or gain weight
2. Running or not
3. Does strength training or not
4. Does muscle building training
5. Level of activity:

a. Sedentary
b. Lightly active
c. Moderately active
d. Active
e. Extremely active

6. Amount of his recommended daily calories = C.

Based on the formulas I've given you I want you to give me a general algorithm for calculating: x1, x2, x3, x4 while x1 + x2 + x3 + x4 = 1.

Algorithm: Calculation of x1, x2, x3, x4

1. **Input**:
    - **Goal**: Lose weight, maintain weight, or gain weight.
    - **Activity Type**: Running, strength training, muscle-building training.
    - **Activity Level**: Sedentary, lightly active, moderately active, active, extremely active.
    - **Recommended Daily Calories (C)**.
    - **Macros Constraints**:
        - 0.45≤x1≤0.650.45 \leq x_1 \leq 0.650.45≤x1≤0.65 (carbohydrates)
        - 0≤x2≤0.10 \leq x_2 \leq 0.10≤x2≤0.1 (sugars)
        - 0.25≤x3≤0.350.25 \leq x_3 \leq 0.350.25≤x3≤0.35 (fats)
        - 0.1≤x4≤0.350.1 \leq x_4 \leq 0.350.1≤x4≤0.35 (protein)
2. **Set Default Values for x1, x2, x3, x4**:
    - x1=0.55x_1 = 0.55x1=0.55 (midpoint of 0.45–0.65 for carbohydrates)
    - x2=0.05x_2 = 0.05x2=0.05 (midpoint of 0–0.1 for sugars)
    - x3=0.3x_3 = 0.3x3=0.3 (midpoint of 0.25–0.35 for fats)
    - x4=0.2x_4 = 0.2x4=0.2 (midpoint of 0.1–0.35 for protein)
3. **Adjust x1, x2, x3, x4 Based on Input**:
    - **Step 1: Adjust Based on Activity Type**:
        - If running or endurance-based activities:
            - Increase x1x_1x1 (toward 0.6–0.65).
            - Decrease x3x_3x3 slightly (toward 0.25).
        - If strength training or muscle building:
            - Increase x4x_4x4 (toward 0.25–0.35).
            - Decrease x1x_1x1 slightly (toward 0.45–0.5).
    - **Step 2: Adjust Based on Activity Level**:
        - **Sedentary**: Favor lower bounds for all macronutrient ranges.
        - **Lightly Active**: Slightly increase x1x_1x1 and x3x_3x3.
        - **Moderately Active**: Keep default values.
        - **Active**: Increase x1x_1x1 and x4x_4x4.

        - **Extremely Active**: Maximize x1x_1x1 and x4x_4x4, reduce x3x_3x3.

4. **Check Constraints**:
    - Ensure all x1,x2,x3,x4x_1, x_2, x_3, x_4x1,x2,x3,x4 values remain within their defined ranges:
        - 0.45≤x1≤0.650.45 \leq x_1 \leq 0.650.45≤x1≤0.65
        - 0≤x2≤0.10 \leq x_2 \leq 0.10≤x2≤0.1
        - 0.25≤x3≤0.350.25 \leq x_3 \leq 0.350.25≤x3≤0.35
        - 0.1≤x4≤0.350.1 \leq x_4 \leq 0.350.1≤x4≤0.35
5. **Output**:
    - Return the calculated x1,x2,x3,x4x_1, x_2, x_3, x_4x1,x2,x3,x4 along with the unchanged daily calorie value CCC.

Implementation Example:
For a man aiming to gain weight, does muscle-building training, and is moderately active:

1. **Default Values**:
    - x1=0.55,x2=0.05,x3=0.3,x4=0.2x_1 = 0.55, x_2 = 0.05, x_3 = 0.3, x_4 = 0.2x1=0.55,x2=0.05,x3=0.3,x4=0.2.
2. **Activity Type Adjustments**:
    - Muscle-building increases protein needs: x4=0.3x_4 = 0.3x4=0.3.
    - Slight reduction in carbohydrates: x1=0.5x_1 = 0.5x1=0.5.
3. **Activity Level Adjustments**:
    - Moderately active keeps fats at x3=0.3x_3 = 0.3x3=0.3 and sugars at x2=0.05x_2 = 0.05x2=0.05.
4. **Final Values**:
    - x1=0.5,x2=0.05,x3=0.3,x4=0.3x_1 = 0.5, x_2 = 0.05, x_3 = 0.3, x_4 = 0.3x1=0.5,x2=0.05,x3=0.3,x4=0.3.