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.