Name: Emir Dincer
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HW 1: Do a Load of Laundry

1. Identify the problem, metric, be specific

- **Problem**: You need to clean your clothes (Objective: clean and properly sorted clothes without damage).
- **Question**: What is the best way to efficiently do laundry without damaging clothes or wasting resources like detergent, water, or electricity?
- **Why the question**: The laundry needs to be done regularly to maintain hygiene, and the wrong process could cause problems like color bleeding, fabric damage, or inefficient use of resources.

2. What do I need to know to answer the question?

- **Action point**: Understanding the types of clothes, their fabric, and appropriate care methods.
- **What needs collecting**:
    - Information on clothes labels (e.g., washing temperature, material type).
    - Detergent and machine settings (e.g., water temperature, wash cycle).
    - Detergent type: *HE?*
- **Beginning data**: Sort clothes by color, fabric type, and separate very dirty clothes from somewhat dirty clothes (bad smell vs stain).
- **Collect data for**: Knowing the best temperature, detergent, and cycle for each fabric and color type to avoid damage.

3. Identify all things I need to know before using the washing machine

- **Budget**: Cost of detergent, water, and electricity usage based on the chosen machine settings.
- **What raw data?**: Type of clothes, amount of dirt, and level of care needed (delicate vs. heavy).
- **Inferences**: Based on clothes type and dirt, decide on machine settings such as wash cycle length, temperature, and spin speed.

4. Organize the data and decide what I need to collect

- **Data Cleaning**: Make sure all clothes are properly sorted by color, fabric, and care type.
- **Outliers**: If there are very delicate clothes, they might need special treatment like hand washing or air drying.

- **Make data usable**: Ensure the right amount of detergent is used (read label instructions), and select appropriate machine settings (cold water for colors, hot for whites, etc.).
- **Data Relationships**: Understand how different fabrics react to temperature, detergent type, and cycle length.
- **Apparent vs. Inferred**: Base decisions on clear information, like care labels, instead of assuming all clothes can be washed together.

5. Find and identify the relationships

- **Look for**: Connections between fabric type, color, and temperature requirements to prevent damage.
- **Outliers**: Clothes like wool or silk that need special care compared to standard cotton fabrics.
- **Percentage**: What percentage of the load needs specific care (e.g., 20% delicates, 80% regular)? Adjust cycle accordingly.
- **Chart**: Imagine how different cycles impact clothes over time, leading to shrinkage or wear. Visualize this in terms of what's right or wrong (e.g., cold vs. hot wash).
- **Root cause**: Ensure the right detergent and temperature are used to prevent issues like fading or shrinking.

6. Find a solution

- **Undo the problem**: If clothes are damaged (e.g., shrunk or color faded), avoid repeating the same settings. Switch to gentler cycles, colder water, or air-dry options.
- **Change the situation**: Organize laundry in smaller, more specific loads to improve care, especially for delicates and bright colors.

7. Presentation/Tell a story

- **Opportunities**: Through this process, the opportunity to streamline laundry (e.g., saving on detergent, water) arises by identifying the most efficient methods.