**1. Setup**

* **Define Input Streams:**
  + Programs (InputStream1)
  + Projects (InputStream2)
  + Business Outcomes (InputStream3)
  + Key Deliverables (InputStream4)
* **Create dictionaries** to map relationships:
  + Map to hold Program to Project relationships.
  + Map to hold Project to Business Outcome relationships.
  + Map to hold Business Outcome to Key Deliverables relationships.
* **Initialize a list** to hold the final combined hierarchical records.

**2. Process Business Outcomes**

* **For each Business Outcome**:
  + **Check if it has no child items** (i.e., no outward issue link):
    - Begin at this Business Outcome and trace upwards using the parent link (inward issue link).
  + **While tracing upwards**:
    - Determine the parent type:
      * If the parent is another Business Outcome, continue tracing upward.
      * If the parent is a Project or Program, stop tracing and prepare to link.
    - **Store the linkage**:
      * If the parent is a Project or Program, record the linkage.
      * **If the hierarchy is nested** (e.g., Business Outcome under another Business Outcome or under a nested Project):
        + Duplicate records to represent each hierarchical path.
      * Append the linkage record to the final list.

**3. Process Projects**

* **For each Project**:
  + **Link the Project to its Program and Business Outcomes**:
    - If the Project is under a Program, store this linkage.
    - If the Project has multiple Business Outcomes or is nested, ensure that all paths are captured.
  + **If the Project is nested under another Project**:
    - Trace upwards to find the first Program in the chain.
    - Duplicate records to capture all hierarchical relationships.

**4. Process Key Deliverables**

* **For each Key Deliverable**:
  + **Identify its parent**:
    - Check if the parent is a Business Outcome, Project, or Program.
  + **Trace upwards**:
    - If the parent is a Business Outcome, trace upwards to find the associated Project and Program.
  + **Store and record the linkage**:
    - Record the linkage in the final list.
    - Ensure any hierarchical paths are represented, especially for nested structures.

**5. Finalize and Prepare Output**

* **Review all combined records**:
  + **Sort or deduplicate** the final list as necessary.
  + Ensure that orphaned items are properly linked or flagged.
* **Return or output the final hierarchical structure** in the combined records list.