**Color Sorting System: Simplified Specification**

**Project Objective**

To build an automated conveyor that identifies the color of a workpiece and diverts it into a specific bin using a PLC or microcontroller.

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**System Features**

- **Automatic Detection:** Detects when an object arrives at the sensor station.
- **Color Analysis:** Categorizes items (e.g., Red, Green, Blue).
- **Active Sorting:** Uses mechanical pushers to move items into the correct tray.
- **Error Handling:** Items with unknown colors pass through to a "Fail" bin.

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**Core Components**

- **Structure:** Mini conveyor belt with a variable speed motor.
- **Sensors:** * 1x **IR Proximity Sensor** (to trigger the process).
    - 1x **RGB Color Sensor** (to identify the hue).
- **Actuators:** 2x **Pneumatic Pushers** or **Servo Arms**.
- **Control:** 1x **Controller** (PLC or Arduino) to handle the logic.

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**Operational Logic**

1. **Start:** Belt runs continuously.
2. **Sense:** Object passes the sensor; the system reads the RGB values.
3. **Sort:** * **Color A:** Pusher 1 extends.
    - **Color B:** Pusher 2 extends.
    - **Other:** No action (item falls into the end bin).
4. **Safety:** Emergency stop button kills all power.