Project Overview

Adam and Laila's school organized a field trip to an industrial area where they visited one of the factories.

The candy factory has been experiencing a serious problem in the sorting department.

The color sorter machine, which is responsible for separating different colored candies into their respective bins, has been malfunctioning.

As a result, candies of various colors are getting mixed up, causing confusion and frustration for the workers. Adam and Laila realized that this was a problem that could be solved with colors sorting system.

Learning Objectives

By the end of the theme student will be able to:

- ✓ Select Optimal Cam Type.
- ✓ Identify the best belt type for your system.
- ✓ Research and apply methods to prevent jams.
- ✓ Ensure smooth object flow through the system.
- ✓ Identify Belt Drive Components: Recognize pulleys, shafts, and belts.
- ✓ Create conveyors and bins for sorting.
- ✓ Accurately build the sorting system.
- ✓ Design linkages to control sorting arms or gates.
- ✓ Connect a color sensor to an electrical circuit.
- ✓ Connect and synchronize multiple servo motors.
- ✓ Test and fine-tune the color sensor.
- ✓ Configure the circuit to power and sync servos.
- ✓ Understand and apply new functions and loops.
- ✓ Connect sensor input to servo motor output.
- ✓ Integrate Arduino with Python: Interface Arduino with Python for control.

Project Task:

Use the Engineering Design Process to help Adam and Laila identify the damaged part of the machine and determine how to fix it.

Name: ....

Project: ....

Ask

Imagine

Improve

Plan

Create

Reflection

Let's step into the role of production engineers and, let's brainstorm solutions and structures to know the solution for this problem.

How do you think production engineers contribute to improve the economy?

_____

_____

Watch it..

Discover through this link more about production engineer.

Scan Here!

https://youtu.be/peM7cz54fh4

let's Think

How can we design a color sorting system that accurately separates candies by color, ensuring efficiency and reducing errors in a factory setting?

_____

_____

_____

Explore

do it

You have a container filled with balls of various colors.

Help us sort these colored balls into the right containers!

Goal:
Make sure each ball is placed in the correct container, and see how quickly and accurately you can sort them!

Watch it..

To understand more about color sorting let's watch this video.

Scan Here!

https://youtu.be/peM7cz54fh4

Read about it

Research what Industrial Automation is and discover how it can help people. Check out this article to learn more:

https://www.mckinsey.com/capabilities/operations/our-insights/automation-robotics-and-the-factory-of-the-future

Scan Here!

Focus
—

Answer the following questions after reading the previous document :

How are advancements in voice-recognition technology expected to impact robot programming?

A) They will require more complex programming methods.
B) They will make robots less flexible in task execution.
C) They may allow robots to receive verbal instructions.
D) They will eliminate the need for any programming.

How can integrating automation systems into existing processes benefit the company?

A) Decreases the requirement for skilled labor.
B) Improves machine communication for greater efficiency.
C) Complicates the overall operational process.
D) Removes all manual labor from production.

How do modern industrial-networking technologies facilitate automation?

A) By allowing machines to communicate on the factory floor.
B) By complicating machine operations.
C) By increasing the need for worker input.
D) By separating machines from one another.

Why is it important for automation programs to align with business goals?

A) To prioritize only cost savings.
B) To connect improvements with the company's strategic goals.
C) To minimize technology integration needs.
D) To complicate operational processes.

Practice

Write a journal paragraph about automation, explaining both the good and bad effects it can have on people.