

UNIVERSITI TEKNOLOGI MARA

**DESIGN AND FABRICATION OF
CANDY SORT AND PACK MACHINE**

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ABSTRACT

This project introduces a candy sorter and sealing machine designed to streamline the sorting and packaging process of candies based on color detection. With the growing demand for efficient candy packaging, manual sorting and packaging processes become tedious and prone to errors. The proposed machine aims to address this issue by automatically sorting candies according to their colors and packaging them in a systematic and organized manner. The main objective of the project is to achieve accurate color detection, even distribution, and efficient sorting of the candies using Arduino commands. The methodology involves designing a hardware system comprising an Arduino microcontroller, color sensors, motors for sorting, and a packaging mechanism, along with developing corresponding Arduino code for color detection, sorting logic, and packaging control. The expected results include a fully functional candy sorting and sealing machine capable of efficiently sorting candies by color and packaging them, thus improving productivity, and reducing manual effort in candy packaging processes.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Candies are a universally loved treat, enjoyed by people across all demographics due to their appealing flavors, vibrant colours, and satisfying textures. In 2024, the global confectionery market was valued at approximately \$210 billion, with candies accounting for a significant share of this revenue. [3][4] The popularity of candies spans diverse contexts, such as confectionery displays, party favors, promotional gifts, and retail packaging, where their visual appeal and variety play a crucial role.

A critical aspect of many candy-related applications involves sorting candies by colour, particularly for creating visually attractive displays or ensuring consistency in packaging. However, this process is typically performed manually, which can be time-consuming and inefficient. For instance, sorting a batch of 1,000 candies by hand can take up to 2-3 hours, depending on the number of colours involved. [2] Scaling this effort to larger quantities or meeting tight deadlines becomes increasingly challenging.

Despite the high demand for colour-sorted candies, there are currently no widely available or affordable machines designed to automate this process. A survey conducted among small and medium-sized confectionery businesses revealed that 85% of respondents relied on manual sorting methods, with 78% citing labor-intensive sorting as a bottleneck in their operations. [5][6] Moreover, manual sorting introduces the potential for errors and inconsistencies, further affecting product quality.

Given these challenges, there is a compelling need to design and develop a candy sorter machine capable of automating the sorting process based on colour. Such a solution would improve sorting accuracy, reduce labor costs, and save significant time, making it a valuable tool for confectionery manufacturers, event organizers, and other stakeholders in the candy industry.