

PROTOTYPE DESIGN COLLECTION

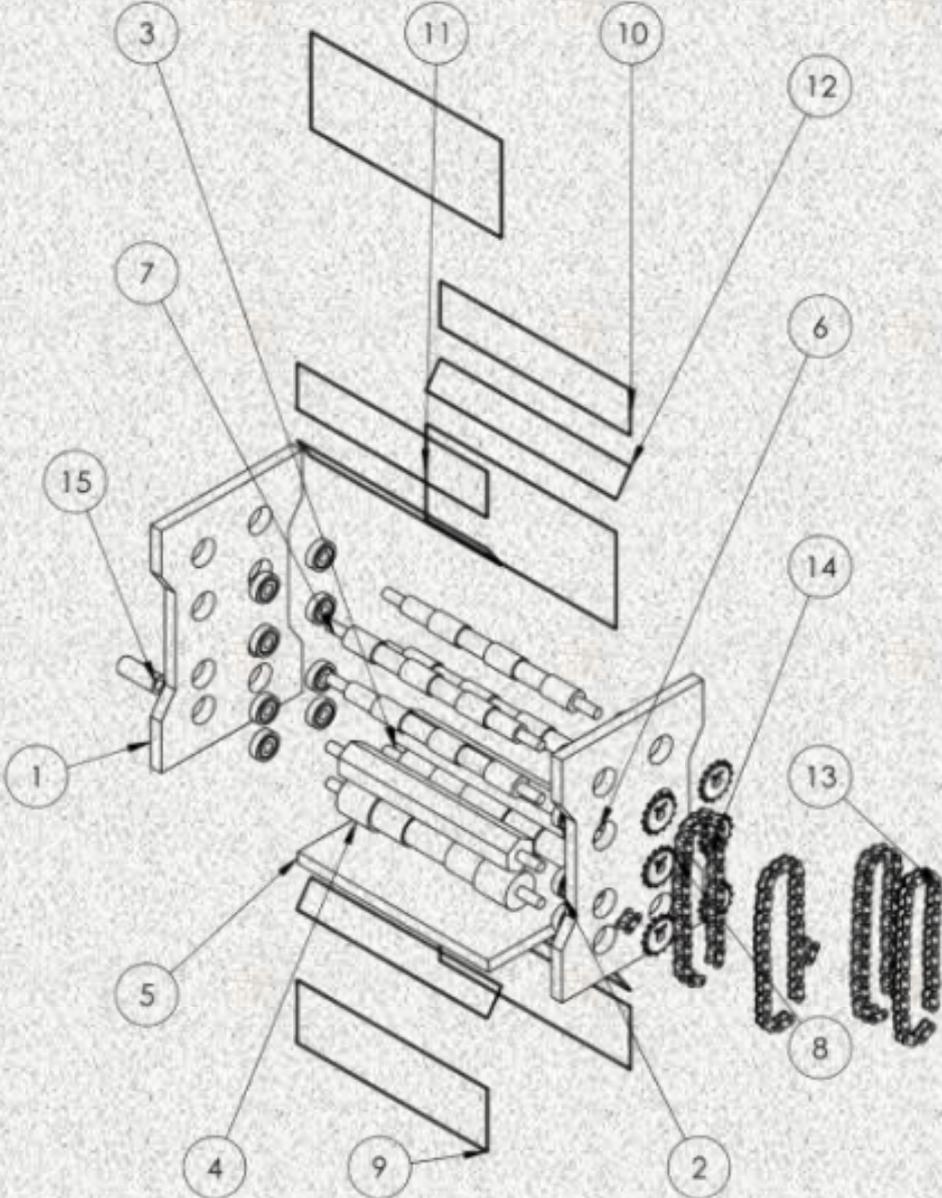
SERIES 4



Universiti Teknologi MARA
Pasir Gudang Campus

Prototype Design Collection

Series 4



Ahmad Najmie Rusli

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FOREWORD

This digital book on Prototype Design Collection Series 4 (PDC Series 4) is published as a reference design for mechanical engineering students. The designs presented experience a few phases of analysis before fabrication of prototype. Each project summarises the project description, prototype, figures, and design parameter. The design products vary in tools or equipment for household, workshop, entrepreneur, etc. Suggested material and detail of prototype dimension are also mentioned in this book.

It is hoped that this book will assist the students to have more ideas on innovation design products in the future.

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CHAPTER 1

Design and Fabrication of a Multipurpose Baby Cot

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PROJECT DESCRIPTION

The increasing demand for space-saving and multifunctional baby furniture has led to the development of a multipurpose baby cot, designed for household use and emergency situations such as floods. This project focuses on the design and fabrication of a modular baby cot that integrates convertibility, buoyancy for flood safety, and structural stability. The design process involved CAD modeling, material selection, and fabrication using lightweight yet durable materials to ensure strength and water resistance. Engineering analysis was conducted to assess load-bearing capacity, stability, and structural integrity under different conditions. Testing results showed that the cot remained stable while floating and maintained its balance under load. However, further improvements in waterproofing, weight distribution, and attachment mechanisms are recommended to enhance durability and long-term usability. This project demonstrates the feasibility of integrating modular and buoyant features into baby furniture, providing a practical and adaptable alternative for modern households and emergency relief applications.

Keywords: *Baby Cot, Disaster Aid*

PROTOTYPE



DESIGN PARAMETER

