

# PROTOTYPE DESIGN COLLECTION

## SERIES 2



# Prototype Design Collection

Series 2



**AHMAD NAJMIE RUSLI**

**UNIVERSITI TEKNOLOGI MARA CAWANGAN JOHOR  
KAMPUS PASIR GUDANG**

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# FOREWORD

This digital book on Prototype Design Collection Series 2 (PDC Series 2) 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 114

### Adjustable Wide Multifunctional Trolley

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#### PROJECT DESCRIPTION

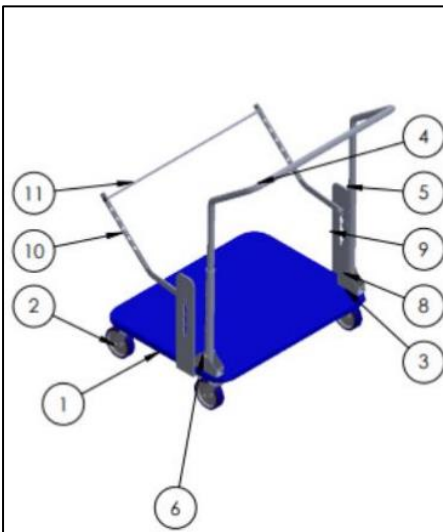
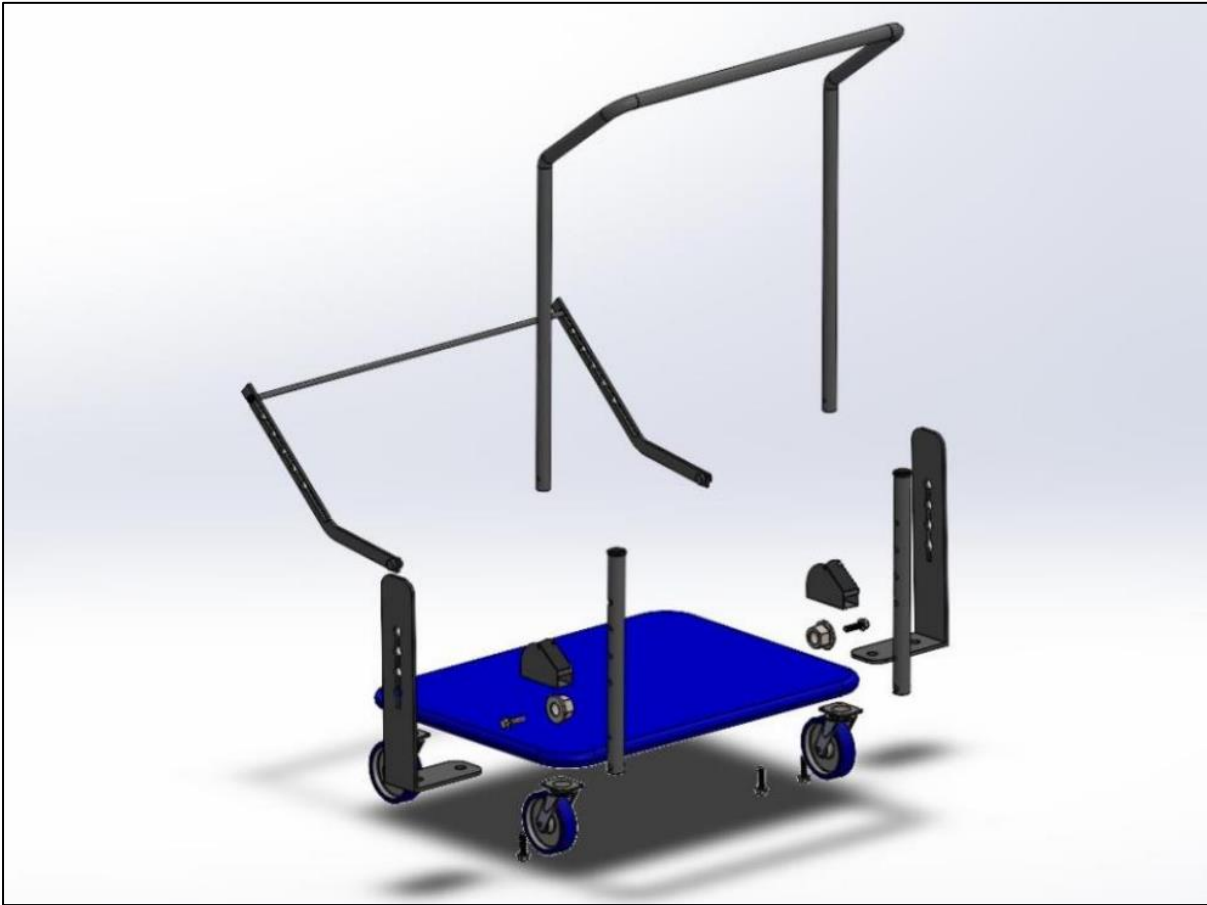
The project focuses on addressing the shortcomings of commonly used trolleys in various industries. While trolleys serve the purpose of transporting materials, they are often not user-friendly and can result in back pain and potential harm to the user's spine. To tackle this issue, a new trolley design has been developed that offers multiple functions while preventing back pain during lifting and loading activities. The main objectives of this project are to design an adjustable, wide, and multifunctional trolley, as well as analyze and fabricate an extendable version of this trolley. The target audience for this project includes individuals of all ages, including women, senior citizens, and children, ensuring that everyone can easily handle this machine. The new trolley design aims to alleviate users' concerns about back pain, allowing them to work more comfortably. During the fabrication process, careful consideration is given to selecting appropriate materials that are lightweight, durable, and capable of withstanding heavy loads. Ultimately, this project aims to introduce a new and versatile trolley product with enhanced functionality.

**Keywords:** *Trolley, Multifunctional, Adjustable*

#### PROTOTYPE



**DESIGN PARAMETER**



ITEM NO.	PART NUMBER	SOURCE	QTY.
1	Base	Fabricate	1
2	Assem caster wheel_DhavalPonda_1100 16389	Standardize	4
3	Handle Pin	Fabricate	2
4	Handle Bar	Fabricate	1
5	Handle stand	Fabricate	2
6	B18.2.3.9M - Heavy hex flange screw, M5 x 0.8 x 35 --165	Standardize	2
7	B18.2.3.9M - Heavy hex flange screw, M12 x 1.75 x 20 --20N	Standardize	4
8	B18.2.2.4M - Hex flange nut, M5 x 0.8 --N	Standardize	2
9	Adjustable Hinge.smg	Fabricate	2
10	Guard	Fabricate	2
11	Rod	Fabricate	1