ME 356 - LEGO Machine Design

Project Description:
Your group will be given a set of LEGO parts to invent a "machine" that performs a specific function. The function of your machine can be whatever you choose, but it must incorporate the machine elements learned in class[1].

Project Requirements:
- You must use as many of the LEGO parts we supply to you as possible (Table 1).
- Your group must perform an analysis of <u>at least 3</u> different machine elements learned in class[1] that are present in your machine. Example: determine the safety factor for a shaft for an operational load.
- Your group will give a 5 minute presentation to "pitch" your machine to the Prof. & TAs on <u>Wed, March 18 at 10:30-12:20am</u>. In your pitch, you will need to 1) introduce your machine, 2) give a live demo of your machine, and 3) discuss your analysis of its machine elements (with numbers, please!).

Grading:
The project will be graded based on your creativity in the use of your parts, your incorporation of class concepts, and the delivery of your final presentation.

20% - Use of parts
20% - Creativity in design
40% - Analysis of 3 machine elements
20% - Presentation/pitch to Prof & TAs

Parts List:
Shown in Table 1 are the list of parts assigned to each group. Check the table to ensure that your group is given all of the appropriate parts. You may also use additional parts from the community supply. You are welcome to donate your own extra parts to your machine if you wish, but they *must* be used for the course concepts.

Table 1. LEGO parts assigned to all groups

PART NAME	QTY	PART NAME	QTY
8 tooth gear	4	2x1 brick with hole	6
16 tooth gear	3	4x1 brick with holes	4
24 tooth gear	2	8x1 brick with holes	2
40 tooth gear	1	Bushing	10
Worm gear	1	Belt Wheel	4
Rack (rack & pinion)	1	Belt	2
Long Axle/Shaft	4	Base Plate	1
Short Axle/Shaft	4	Plastic Bin	1

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[1] The machine concepts for ME 365 include 1) Shafts, 2) Belts, 3) Bearings, 4) Lubrication, 5) Springs, 6) Screws, 7) Bolts, 8) Joints, 9) Welds, and 10) Gears.