Automatic Baby Formula Maker

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Introduction

The team wanted to create a **Baby Formula Maker** that would require little or no user interaction.





Outline

Product Functionalities Construction Design Software Flowchart Hardware Description Verification and Testing Construction Limitation Cost

Product Functionalities

The machine will take stored water and formula powder, mix them together, and output the combined formula into a regular 8 oz baby bottle
The baby formula maker will consist of fully automatic functions and features such as:

Outline

- Self mixing
- Self Heating
- Self Cleaning
- Disposing waste water

Construction Design

Particle wood cabinet Interior mounting of motors and tubing Interior mounting of breadboard and heating coil Positioning of main water source and formula dispenser Bottle dispenser mechanism

Software Flowchart



Hardware Description

- Block Diagram of Hardware
- The MINI-MAX/51-C2 Microcontroller is the main control unit and it will send signal to activate and deactivate the following hardware:
 - DC motor 1. 2. Water pump Water DC 3. Blender Pump Motor 4, Heating coil 5, LCD 6. Keypad LCD Microcontroller Keypad Blender Heating Coil

Hardware cont.

DC motor- used to release the baby formula into the blender

Blender- used to mix the baby powder and water together

Heating coil- used to heat the water before the water is release into the blender

 Water pump- used to pump the water into the blender, waste bottle, and baby bottle

Verification and Testing

During our testing process, the team encountered many problems:

- The team had electrical wiring problems
- Water leaking from the water source and blender
- The baby formula did not dispense properly
- The water pump did not stop after flow had begun, even after the power was turned off









Construction Limitation

Due to time, resource and skill limitation, the team was unable to fulfill all that was proposed initially.

- The team was unable to provide a "timed formula" due to RTC control
- Stepper motor
- Temperature sensor, waste sensor, bottle detection sensor
- Temperature control



•The team went over the budget by \$61, most of the expense

went to relay boards and water pumps

Components required	Quantity	Description	Price	Total Cost
Relay Board	3	Relays	\$29	\$87
MINI-MAX/51-C2	1	Microcontroller board	\$69	\$69
KEYPAD (KP1-4X4)	1	4x4 keypad	\$24	\$24
LCD242	1	LCD (with connectors)	\$24	\$24
Connector Cables	2	For Keypads and LCDs	\$17	\$24
Construction wood	2	8' X 4'	\$5	\$10
Hinges	16	90 degree hinges	\$1	\$16
Rubber tube	2	1/4" tube	\$2.50	\$5.00
DC motor	1		\$8	\$20
Washer pump	6	Free flowing pump	\$9	\$54
Terminal	1	Alligator clip	\$4.00	\$4.00
Primer	1	Indoor/Outdoor	\$6.00	\$6.00
Paint	5	Spray paint	\$2.00	\$10.00
Brushes	1	Pack of three	\$7.00	\$7.00
Cloth	1	To protect from paint	\$5.00	\$8.00
Glue	1	Sumo Glue	\$5.00	\$5.00
Wire	1	Mini Zipcord	\$5.00	\$5.00
Durabrand blender	1	8 speed blender	\$13.00	\$13.00
Total				\$391.00

Total cost Labor Cost

Equipment Cost

Items	Quantity	Cost		
Digital Multimeter 5492	1	\$574		
DC Power Supply 1761	1	\$699		
Function Generator	1	\$347.65		
Tektronix Oscilloscope	1	\$2,500		
Total	4	\$4,120.65		

Items	Hours	Cost / hou r	Cost
Tai Huynh	144	\$20	\$2,880
Nasser Syed	144	\$20	\$2,880
Andres Torres	144	\$20	\$2,880
Mark Zermeno	144	\$20	\$2,880
Total	576		\$11,520

•All of the equipment was provided by The Technology Department

Labor Cost	\$11,520
Equipment Cost	\$4,120.65
Material Cost	\$391.00
Total Cost	\$16,031.65

•Each team member spend minimum of 144 hours on the project

•The team meets three days each week and worked for 6 hours each day in the time span of 2 months

> •The final cost for the project including labor, equipment, and material is \$16,031.65 Outline

Honorable Mentions

We would like to thank all the following people that provided the group with advice and lent a hand to complete our project.



Senior Project Experience Each one of us would like to explain what we experienced in senior project.





Questions?

