Portable Carrier A

TEAM C5:

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ME486c-006
Class Instructor: Dr. David Trevas
03/12/2019

Project Description

What is our project about ?

-A device to carry 5 bags from car to Apartment.

Who is our Client?

-Dr. Hesam Moghaddam

Why is this product important ?

-Learn concepts about ME

-solve a problem

Customers Requirements

- Safety
- Carry 5 bags
- Easy to use
- weight (10-15 lb)
- Climb Stairs (7in v, 11in h)
- Distance (100-500ft)
- Size (w:16",h:36.5",d:20"-28")
- Different Weather
- Portable and Foldable

[1]

Abdullah Alroumi
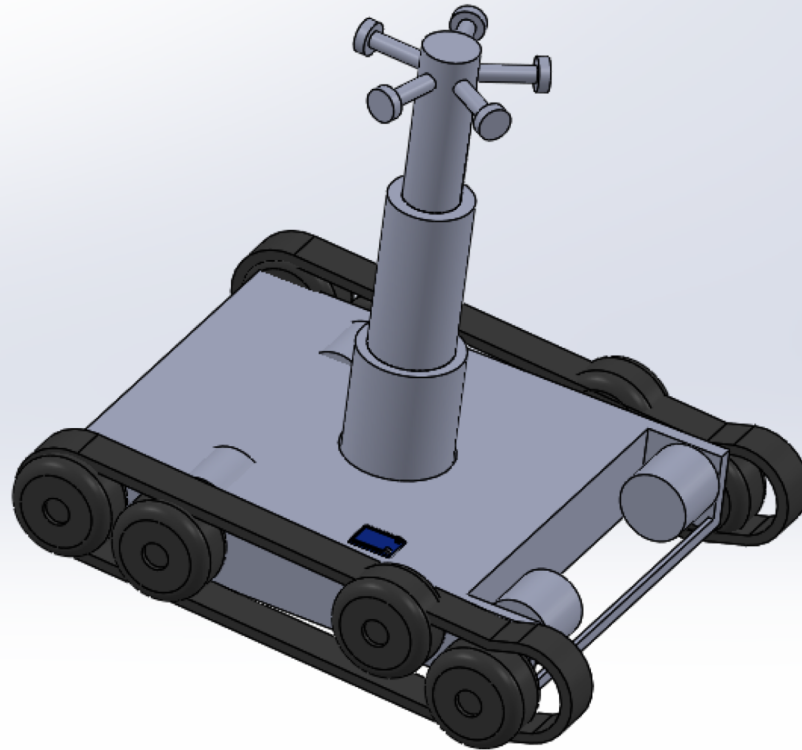Portable Carrier A
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CAD MODEL:

Figure 2: CAD model
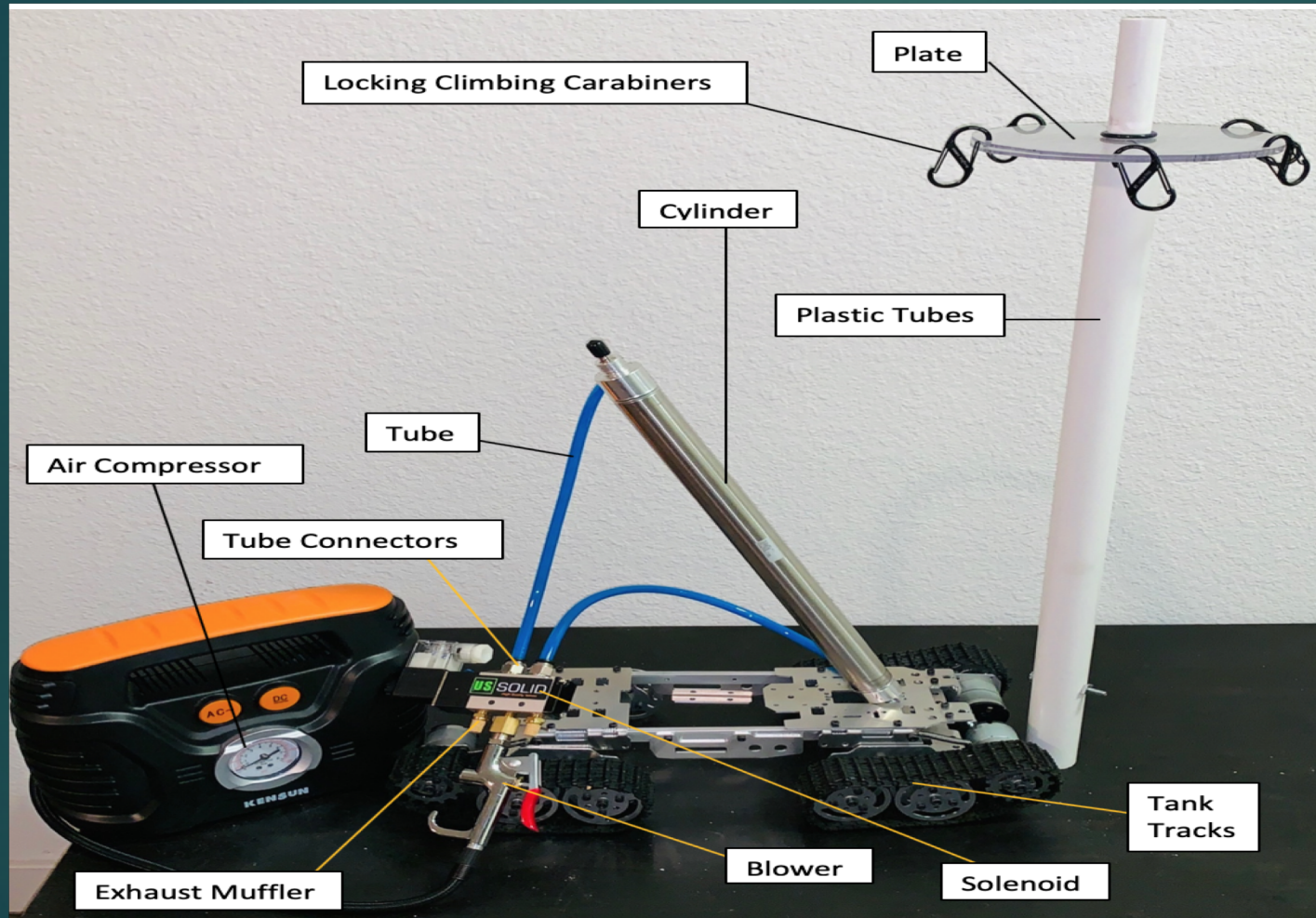
High Quality Image:

Figure 3: Our design with subsystems labeled

Updates: What have we accomplished?

Purchases:

1-pneumatic cylinder

2-Tube connectors

3-Tubing

4-1/4" female to 1/8" male

5-Air compressor intake fittings

6-Solenoid

7-Air compressor

8-Air dispursers

9- Speed controller

10-Tires

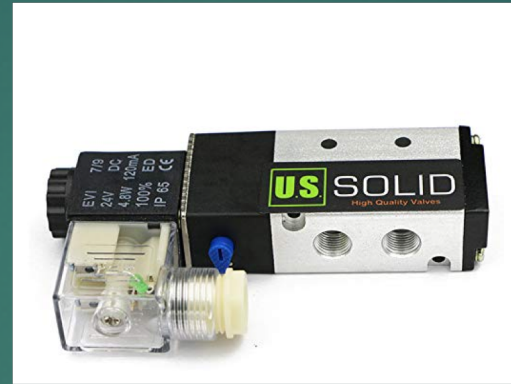11-Plastic pipes (FALL 2018)

12-Arduino Kit (FALL 2018)
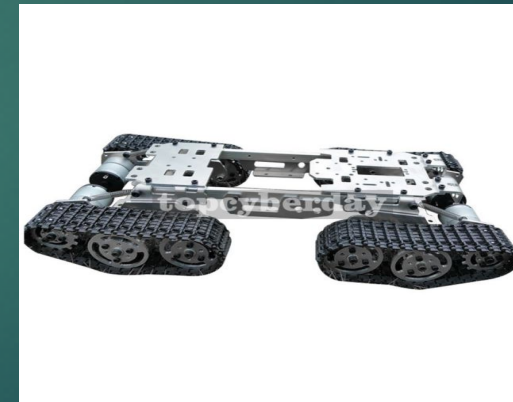

Figure 5: Solenoid

Figure 4: Cylinder

Figure 6: Tank Tracks

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Changes to the design:

-Combined pneumatic cylinder parts, assembled tank tracks and improved the prototype.

-Change Plate for telescoping.

-Tank chain tires cut in half.

-Removed the holder from the design.
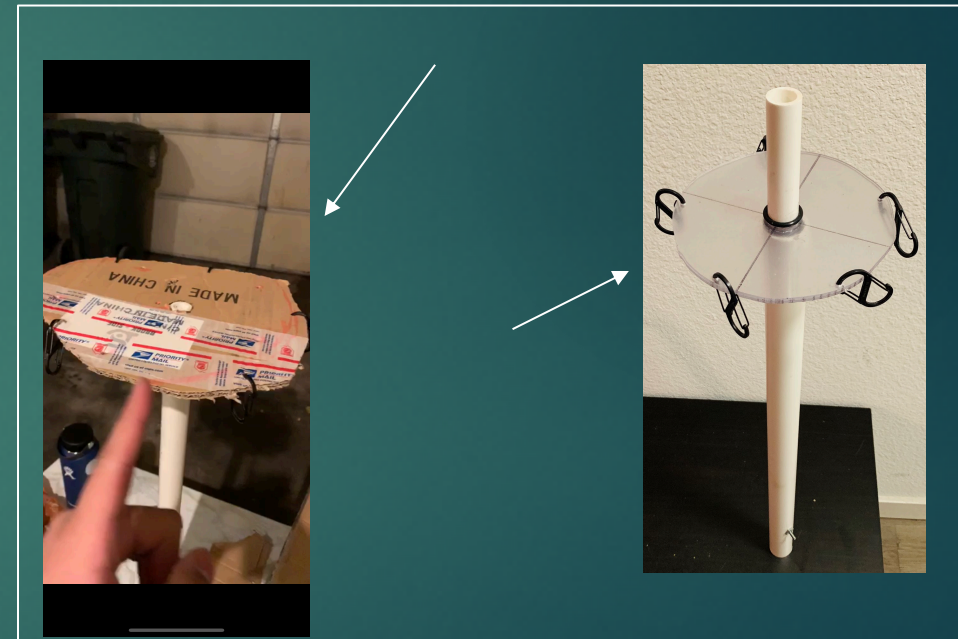
-The process of getting Bags in and out of the trunk.

Figure 7-8: Telescoping

Salman Alostaz
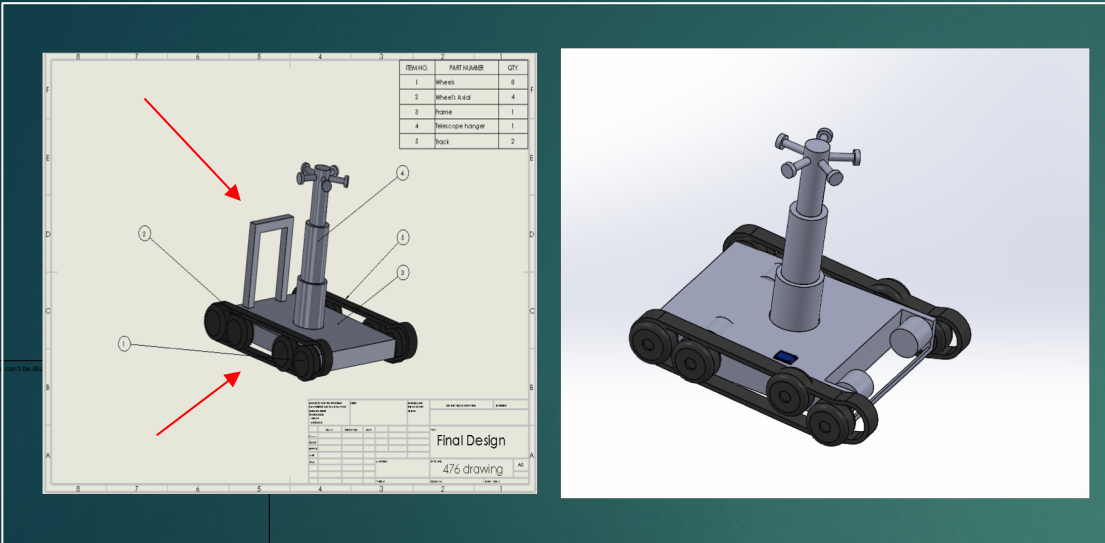Portable Carrier A
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Visual Evidence:

Figure 9-10: CAD model differences
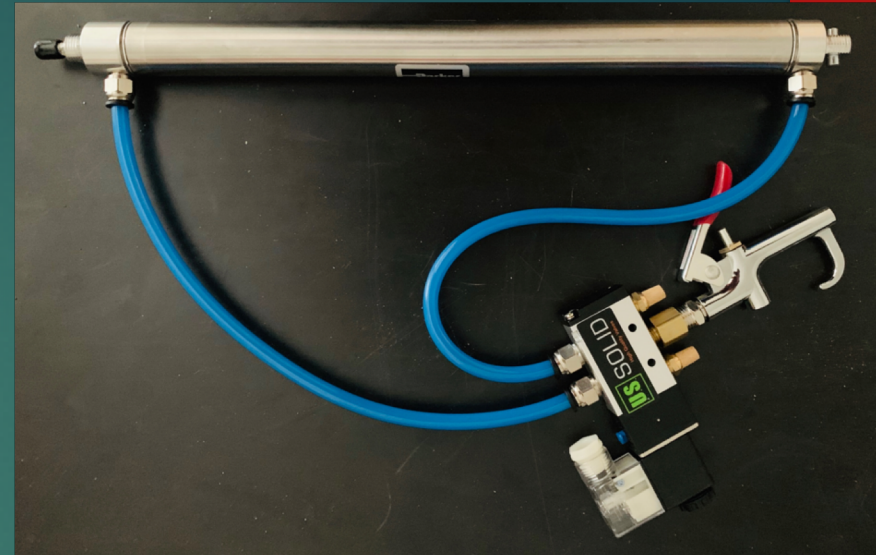
Figure 11: Pneumatic cylinder system

Figure 12-13: Tank Tracks parts

Figure 14: Tank Tracks

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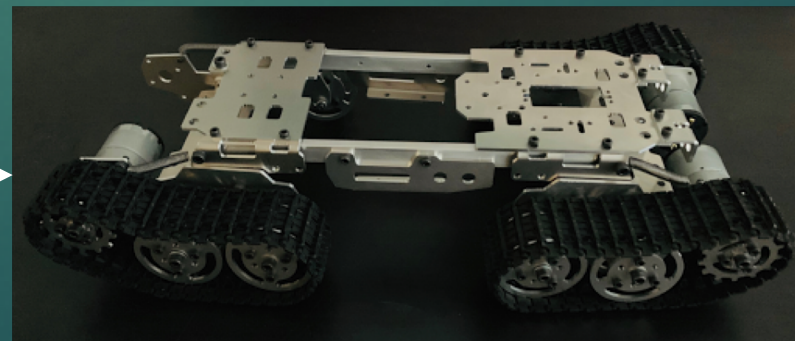
Moving Forward: Analytical Analysis

- P = 42W, to move device.

- Motor: I = 1A, P=12W X4 = 48W, Motor shield

- ½ gallon Air tank = 3-4 lifts in our pneumatic system

- Strength of total weight = 10,840 Psi

- Strength base(Steel) = 36,000 Psi

Future Plans

- Set up arduino with motor and with the pneumatic system

- Wire Solenoid

- motor shield

- Air tank rather than Air compressor

- Battery

- Scissor lift

- Re-Assemble tracks

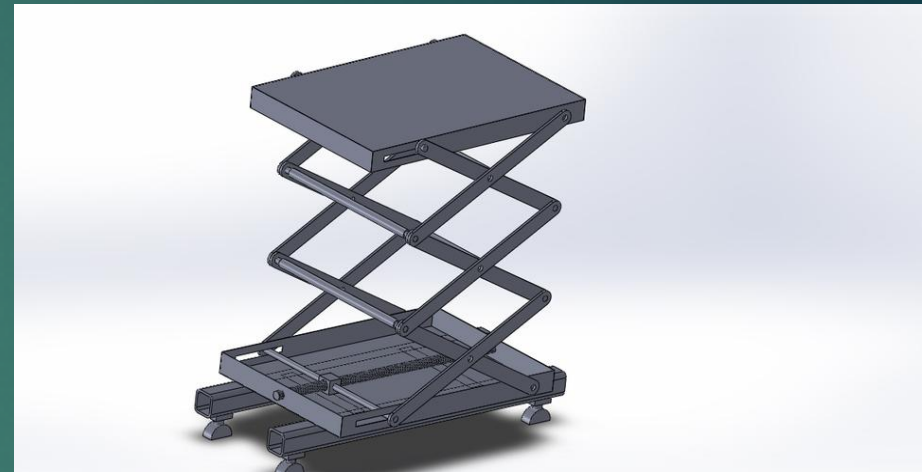Figure 15: Scissor Lift

Figure 16-17: Previous ideas

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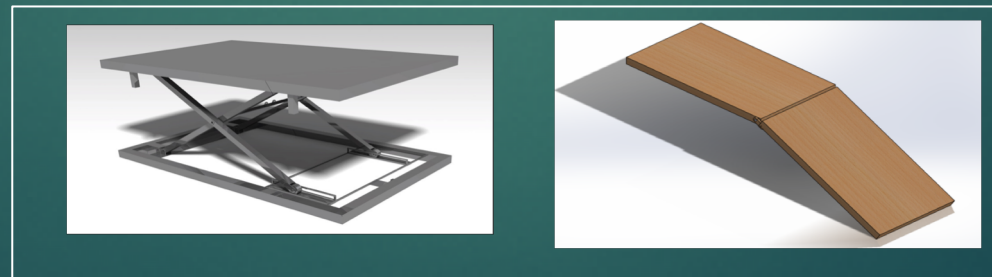
Testing

- Arduino: test codes (motor and pneumatic cylinder)

- Test Telescoping hanger if it bears 50lb

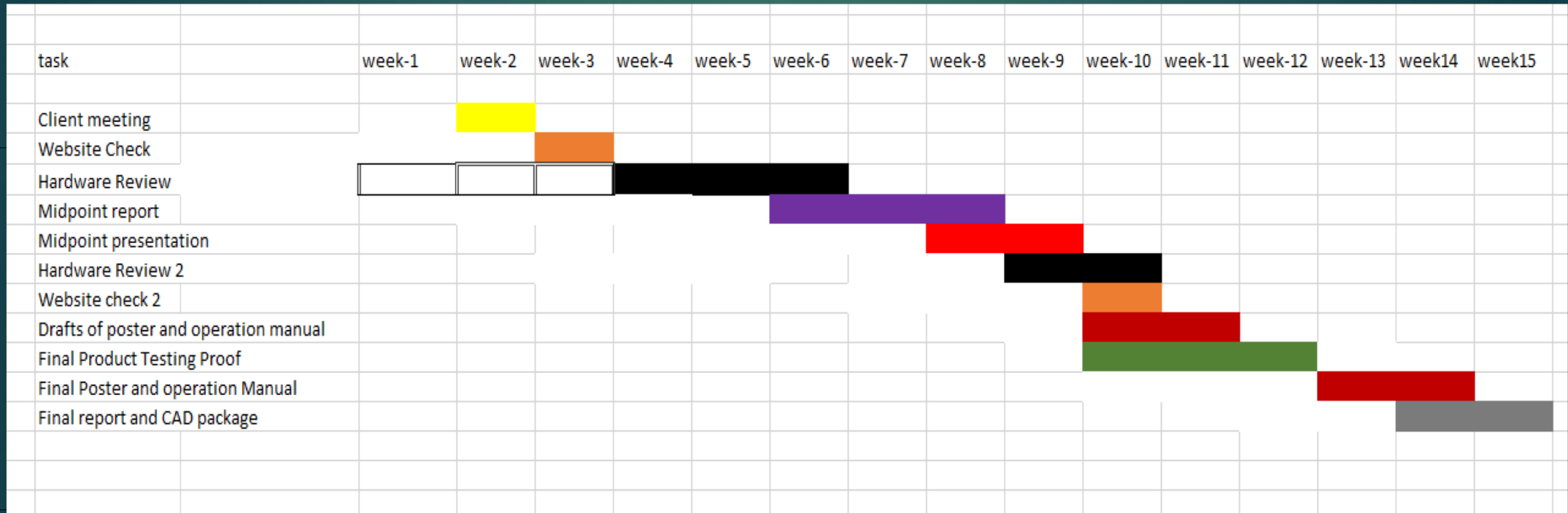- Test if tank track will climb the stairs

Schedule:

Figure 18: Schedule

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Budget:

Part	Part Name	Qt	Cost	Link to Cost estimate
1	Cylinder	1	51.08	https://amzn.to/2NG5Qna
2	Tubing	1	15.95	https://amzn.to/2NJtIWO
3	Tube connectors	1	8.99	https://amzn.to/2CfAz8p
4	1/4" female to 1/8" male	1	4.98	https://amzn.to/2yluNzc
5	Air compressor intake fittings	1	12.87	https://amzn.to/2yluNzc
6	Solenoid	1	16.75	https://amzn.to/2CidK4a
7	Air compressor	1	18.99	https://bit.ly/2RE8egY
8	Air dispursers	1	11.99	https://amzn.to/2J1MdW1
9	speed controller	1	4.8	https://amzn.to/2pTAiRl
10	tires	1	132	https://ebay.to/2FDNxA6
11	plastic pipes	2	7.94	https://thd.co/2yZ98hL
12	Arduino Kit	1	49.99	https://bit.ly/2PYyaqC
13	20v battery	2	75.2	https://amzn.to/2EZIMyv
14	DC motor	1	5.88	https://amzn.to/2TPvGsU
15	Air tank	1	37.67	https://amzn.to/2H7dNmy

Table 1: Budget

Resulting balance:$455.08
Actual expenses:$336.33

References

[1] https://i1.wp.com/creditoagil.es/wp-content/uploads/2015/06/BORRARNOS-DEL-ASNEF-300x290.png?resize=300%2C290

Questions?