ROBO-HACKERS 2015 -2016

STEM ACADEMY NEISD

TEAM NO. 14567

FLL TRASH TREK CHALLENGE

Table of Contents

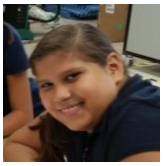
About the Team

Robo-Hackers, team no. 14567, of The STEM Academy North East Independent School District in San Antonio Texas, has six friendly team members with different personalities. This year their goal is to find new solutions for helping the world become green, work hard and play fair throughout the robot game, and have fun.

The Team

Malena Valdez, the captain/project manager of our team and one of the programmers. She keeps the team organized and motivated. She is also an eager learner and always willing to help others. Malena loves to sing in the Nimitz Middle School choir and Play competitive Soccer for the Alamo Heights Fort Sam Houston Soccer League.

Interesting Fact: Malena is a big Harry Potter Fan!

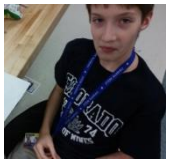


Adriana Cortes, She is our lead programmer. She helps keep the team positive. She knows she's in the best robotics team in STEM. Adriana loves to play violin in the Nimitz Orchestra and to play Agar.io. She gets AB honor role, never gives up, loves to write and do hard math problems, and loves to go to school.

Interesting Fact: Got her art hung up in N.E.I.S.D central office

Russell Rucinski, smart and creative. he helps his team work. He is kind. He helps his team build and come up with new ideas. He tells how things work in the robot and on the robot board. Amazing builder and designer.

Interesting Fact: Loves to build and design amazing robots and Legos



Alexander Stephenson, the designer on the team. He is also a backup builder. Alexander loves math and art. He is in GT and always tries to do well in school. His goal is to go to the Colorado School of Mines and become a demolition engineer.

Interesting fact: competes in UIL during the school year.

Evan Moreno, a builder on team. He is a part time designer and he is very playful and is silly most of the time. He gets the his work done and helps build extensions on the robot. When he grows up he would like to be an architect because he really likes designing things. He would like to go to Yale so he can study architecture.

Interesting Facts: Loves Winnie the Pooh and likes reading books

Robotics FLL Competition ROBOHackers Team No. 14567

Start Week	Sep 15, 2015

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Starting	Sep 15	Sep 22	Sep 29	Oct 6	Oct 13	Oct 20	Oct 27	Nov 3	Nov 10	Nov 17	Nov 24	Dec 1	Dec 8	Dec 15	Dec 22	Dec 29	Jan 5	Jan 9	Jan 12
Project																			
Think About It																			
Identify a Problem																			
Consult Experts																			
Design an Innovative Solution																			
Share with Others																			
Practice Presentation																			
Present Your Solution at a Tournament																			
Robot Game																			
Understand the Rules																			
Field Set up																			
Design/Build																			
Programing																			
Practice Game																			
Competition																			
Engineering Notebook																			
Hiastory update																			
Notebook																			
Lessons Learned																			

SCHEDULE

MEETING LOG

	DATE	LOCATION	TASKS PERFORMED
	9/15/2015	STEM Robotics Lab	First Robotics meeting, Meat coaches and other robotics club members, watch FLL Videos
	9/17/2015	STEM Robotics Lab	Study Rules
	9/22/2015	STEM Robotics Lab	Created Teams
	9/24/2015	STEM Robotics Lab	Brain storm ideas for the project
	9/29/2015	STEM Robotics Lab	Brain storm ideas for the project
	10/1/2015	STEM Robotics Lab	Researched Batteries, what they are made of and how they affect the environment.
	10/6/2015	STEM Robotics Lab	Researched Batteries, what they are made of and how they affect the environment.
	10/8/2015	STEM Robotics Lab	Researched Batteries, what they are made of and how they affect the environment.
	10/13/2015	STEM Robotics Lab	Talked about the robot game and tasks to do in the order.
	10/15/2015	STEM Robotics Lab	Build the practice field.
	10/17/2015	SA Central Library	Mini Maker Fair, Spoke with Boy scouts Robotics FTC team, and Corona Visions (for profit recycle company in SA) about recycling batteries.
	10/20/2015	STEM Robotics Lab	Start Design robot
	10/22/2015	STEM Robotics Lab	Start building, sort
	10/27/2015	STEM Robotics Lab	Finish Building, sorted part box
	10/29/2015	STEM Robotics Lab	Build
	11/3/2015	STEM Robotics Lab	Build

	11/5/2015	STEM JK11	Listen to Solid Waste people continue building robot
	11/10/2015	STEM Robotics Lab	building body and programming (one task - demo, it didn't work)
	11/12/2015	STEM Robotics Lab	Project (talked about a comic book), Programming (one task - sorter) Building - one function)
	11/17/2015	STEM Robotics Lab	
	11/19/2015	STEM Robotics Lab	Built Arm and Program for the sorter. Tested sorter and tested same arm for demo. Made program for the demo.
	11/24/2015	STEM Robotics Lab	NO Meeting. Happy Thanksgiving - Homework: Watch videos about effects of batteries in trash and how they are recycled.
	11/26/2015	Home	NO Meeting. Happy Thanksgiving, Homework: Self Bio, Think about consume.
	12/1/2015	STEM Robotics Lab	Team discussed the skid, the characters and general plot. Rest of team finished homework. Attempted to build arm to do three functions: Compost, Push Truck and pick up propane. Programmers measure the game board and figure the wheel rotations needed.
	12/3/2015	STEM Robotics Lab	Designers and Builders continued to draw and work on arm components for spinning and lift and drop. Programmers worked on a program to get robot to go around the game board without bumping into anything. Learned that the robot was too wide.

	12/8/2015	STEM Robotics Lab	Team Tested robot design in the field
	12/10/2015	STEM Robotics Lab	
	12/14/2015	Home	Wrote Draft Skit
	12/15/2015	STEM Robotics Lab	Programed and tested
	12/17/2015	STEM Robotics Lab	
	12/21 – 24/15	Home	Build Robot and Field
		Home	Programed, created poster, created comic Strip

Trash Trek Project

The Problem

Each member of the team came up with some ideas of different problems we saw affecting the environment locally. We settled on batteries. We did more research on the topic and realized that there are lots of different batteries. We decided to narrow our topic to household batteries because that is the type of batteries we (kids) use most often. The San Antonio Solid waste management department told us that when we through batteries in the trash they will end up in the landfill. We learned that they can be very hazardous to the soil, water, plant and animals when the batteries leak metals such as Lead and Mercury. We also learned that there are centers that recycle batteries by breaking them down into the different materials. The individual materials can be reused.

Our Solution

We figured that when the batteries are disposed of properly there was no problem but unfortunately Americans throw away more than three billion batteries a year and according to the Texas Campaign for the Environment Fund, 250 million household batteries are trashed in Texas each year. We Agreed that the Solution was to educate people about how easy it is to recycle batteries and how harmful they can be if through away in landfills. It is easy to collect used batteries throughout the year in a box or container, then drop them off at the hazardous waste site along with any other chemicals you need to dispose of. Also, there are many places in town that collect used batteries and they send them to recycling centers at no cost to us. For example Call2Recyle has drop off locations in several locations in town such as Home Depot and Sears. There are other companies with drop off locations that are probably convenient for everyone to do the right thing and Recycle batteries!

Share With Others

The team wanted to share in a funny and memorable way. We wrote a short skit with a scenario that is probably very common in homes today. We recorded the skit and shared it with family and friends. We felt like we could do more by creating a comic strip based on the skit. We could shared the comic strip with fellow students and teacher. We also asked our parent to post them in their work information board.

THE SKIT:

Characters

Adriana: Mom (Ms. Charger)

Evan: Buzz (Older brother)

Russell: Dudley (Younger brother)

Alexander: Battery Bob (Battery)

Malena: Battery Barbara (Battery)

Setting: The Charger house. Mrs. Charger, Buzz and Dudley are in the den watching TV.

Buzz: Come on Dudley! Hurry up and change the channel.

Dudley: I'm trying! I think the batteries are dead.

Mrs. Charger: Stop fighting boys. Here are some new batteries. (Russell hands you old batteries, you walk toward trash can).

Dudley: Wait mom! You're not supposed to put used batteries in the normal trash.

Mrs. Charger: Well why not?

Buzz: Yeah dude. What are your supposed to do with them?

Dudley: We should recycle batteries instead of throwing them in the trash. Used batteries are toxic and should not be put in a landfill.

Buzz: But it's just two little batteries….what harm can it do?

Dudley: Actually it's just not two batteries that are being thrown away. Did you know that Americans throw away more than three billion batteries a year?

Mrs. Charger: Wow! that's a lot of batteries. Well I guess I should put the batteries in the recycling bin. (Mrs. Charger starts to walk off)

Dudley: No mom. Batteries are considered hazardous waste and have to be treated differently than normal

Dudley: recycled items.

Buzz: What?! This is sounding like a lot of work.

Dudley: Not really. Just collect your used batteries throughout the year in a box or container. You can then drop them off at the hazardous waste site along with any other chemicals you need to dispose of.

Mrs. Charger: I heard that the San Antonio Solid waste department has opened more hazardous drop off locations throughout the city. They are trying to make it more convenient for us to make the right choice regarding hazardous waste. Unfortunately, there are not very many companies in the United States who can recycle and repurpose batteries. So instead the hazardous waste department will dispose of them in the proper way.

Buzz: Still sounds like a lot of work.

Dudley: Buzz, let me show you a YouTube video about alkaline batteries

Buzz and Dudley walk over to the computer. Video pops up on the screen

Battery Bob: Hello Ya'll! My name is Battery Bob and I am here to teach you a little bit of what I am. A battery can change chemical energy to electricity by putting certain chemicals in contact with each other in a specific way. Batteries come in several styles; you are probably most familiar with single-use alkaline batteries. We power hundreds of items like toys, calculators, tv remotes, cell phones just to name a few. We are very useful. However, we are also considered hazardous waste. (frowns, slumps over) If you throw us away we will end up buried in a landfill and will eventually leak poisonous materials. These chemicals get combined with rain water and form a liquid called Leachate. Leachate liquids pass through the

landfill and release toxic metals such a lead and Mercury which could seep into the aquifer and contaminate the soil. It then becomes a chain reaction and will affect, plants, animals and humans.

Battery Barbara walks onto the screen.

Battery Barbara: Why the long face Battery Bob?

Battery Bob: I'm sad that I can be harmful to the environment.

Battery Barbara: Don't worry Bob. Engineer are working everyday to make us more efficient and green. They are making us with less Mercury and we are even able to be broken down to get other useful metals that we are made of.

Battery Bob: How exciting!

Battery Barbara: While that is all good it is still up to the consumer to make wise decisions on how to dispose of batteries and the choices they make when purchasing batteries

Battery Bob: This news gets me all charged up! I'm ready to spread the news on how to recycle batteries and buy green batteries.

Video stops playing. Boys return to the couch

Buzz: Dude, I didn't know that two little batteries could cause so much trouble. Now that I have learned more about batteries and how the can be harmful to us I am more than willing to go the extra mile to be green.

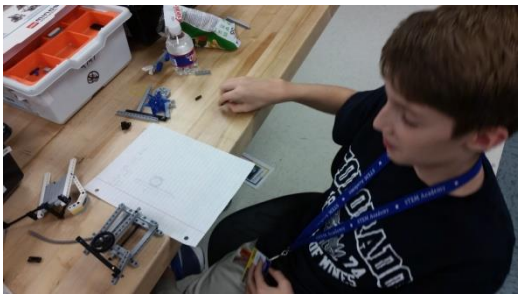
Comic Strip

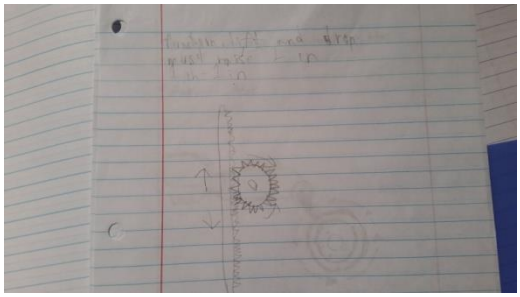
Resources

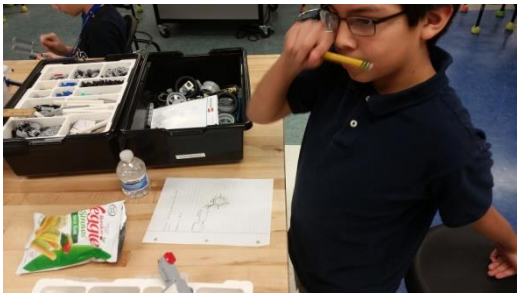
- Texas Campaign for the Environment
- http://www.riobatteryco.com/about-us
- http://www.ehow.com/info_7981016_happens-batteries-leak.html
- http://www.sanantonio.gov/swmd/HHW/HHWDropOffs.asp
- http%3A%2F%2Fwww.candlepowerforums.com%2Fvb%2Fshowthread.php%3F179414-AA-exploded-in-the-cell-phone-charger!!!!&psig=AFQjCNE9UvIJRlwM2T1kQ4QdUWEzjae4QQ&ust=1443820345108105
- www.ehso.com
- https://www.gsbattery.com/content/recycling
- http://www.ehow.com/info_7981016_happens-batteries-leak.html
- https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0CAYQjB1qFQoTCLmm36mYosgCFcaYgAodPZQCeQ&url=http%3A%2F%2Fwww.candlepowerforums.com%2Fvb%2Fshowthread.php%3F179414-AA-exploded-in-the-cell-phone-charger!!!!&psig=AFQjCNE9UvIJRlwM2T1kQ4QdUWEzjae4QQ&ust=1443820345108105
- http://batterycouncil.org/?page=battery_recycling
- https://www.cleanup.org.au/PDF/au/batteries_final.pdf

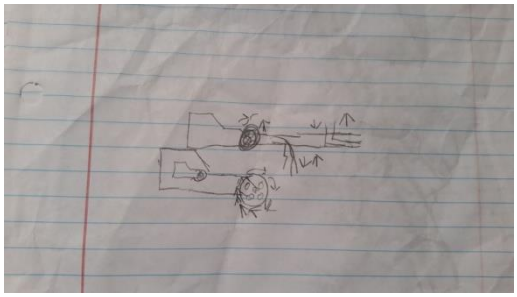
Robot Game

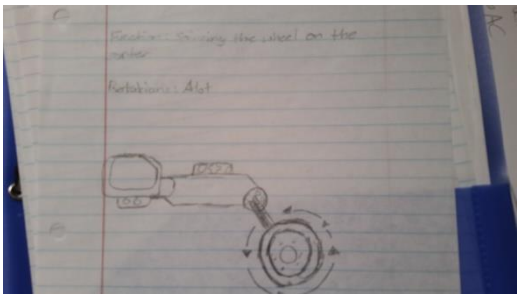
The Designs

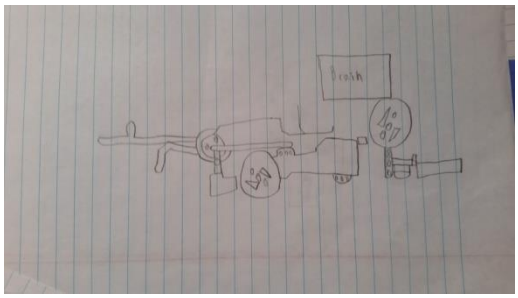


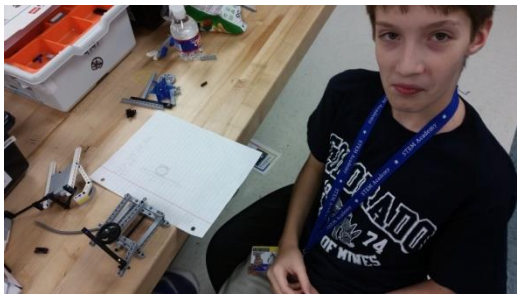




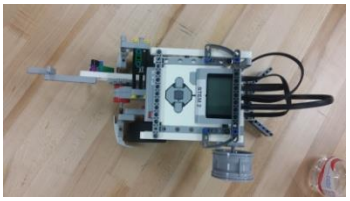


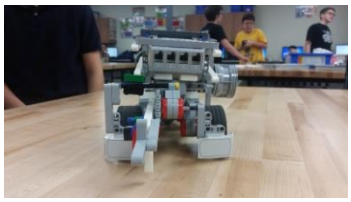
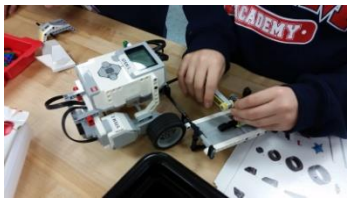


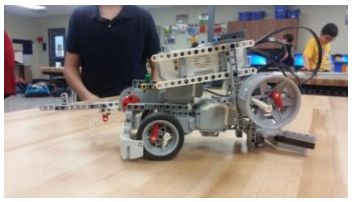
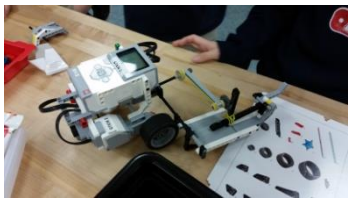
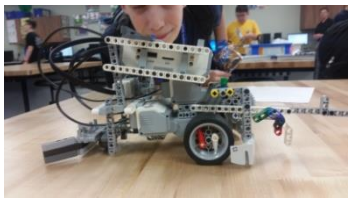
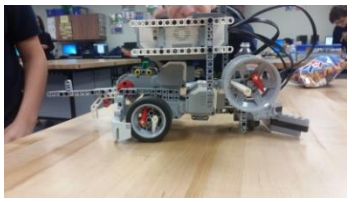
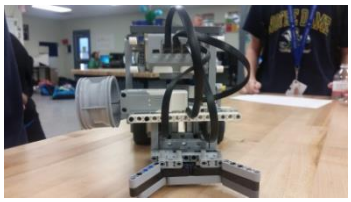
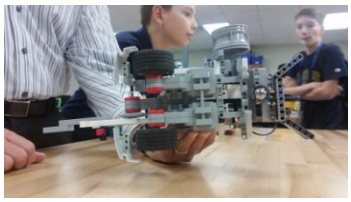


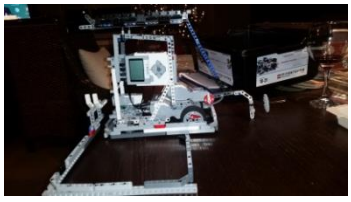
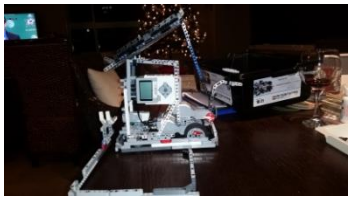


Building

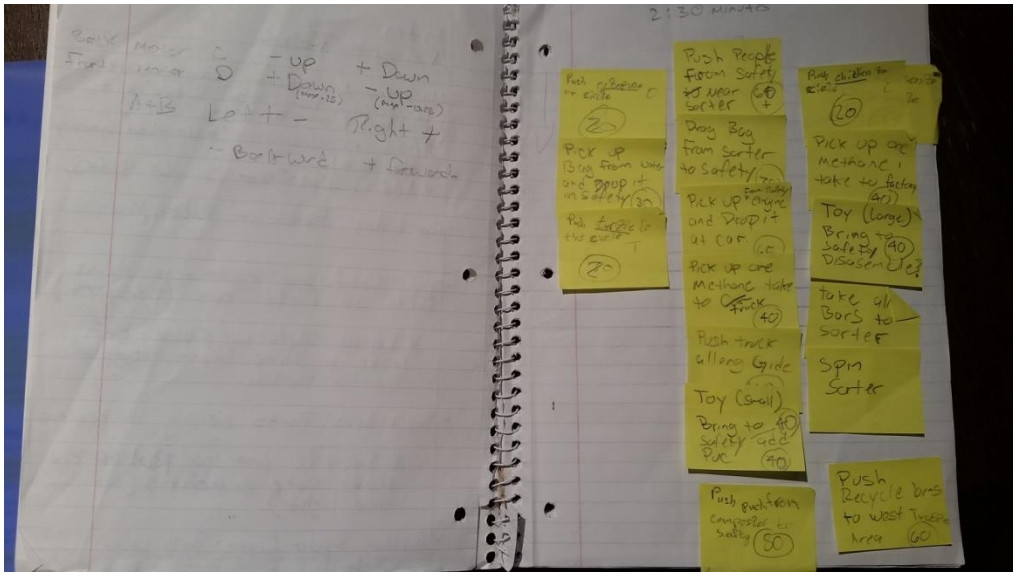



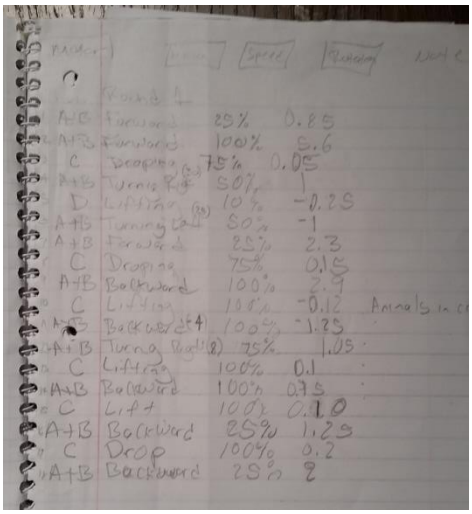



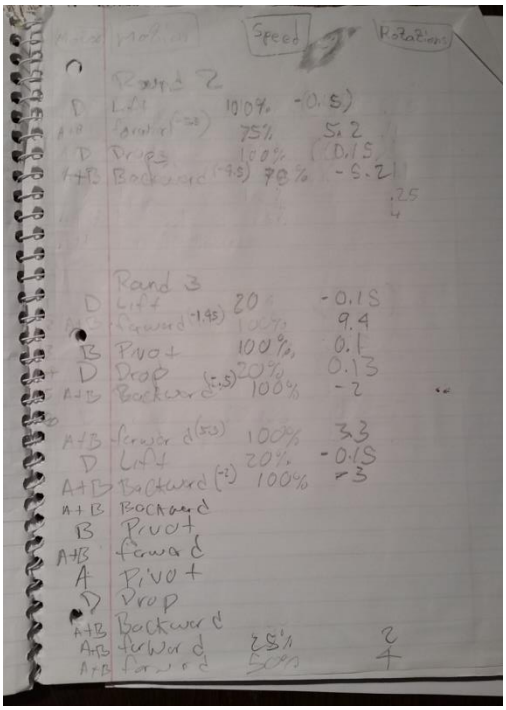







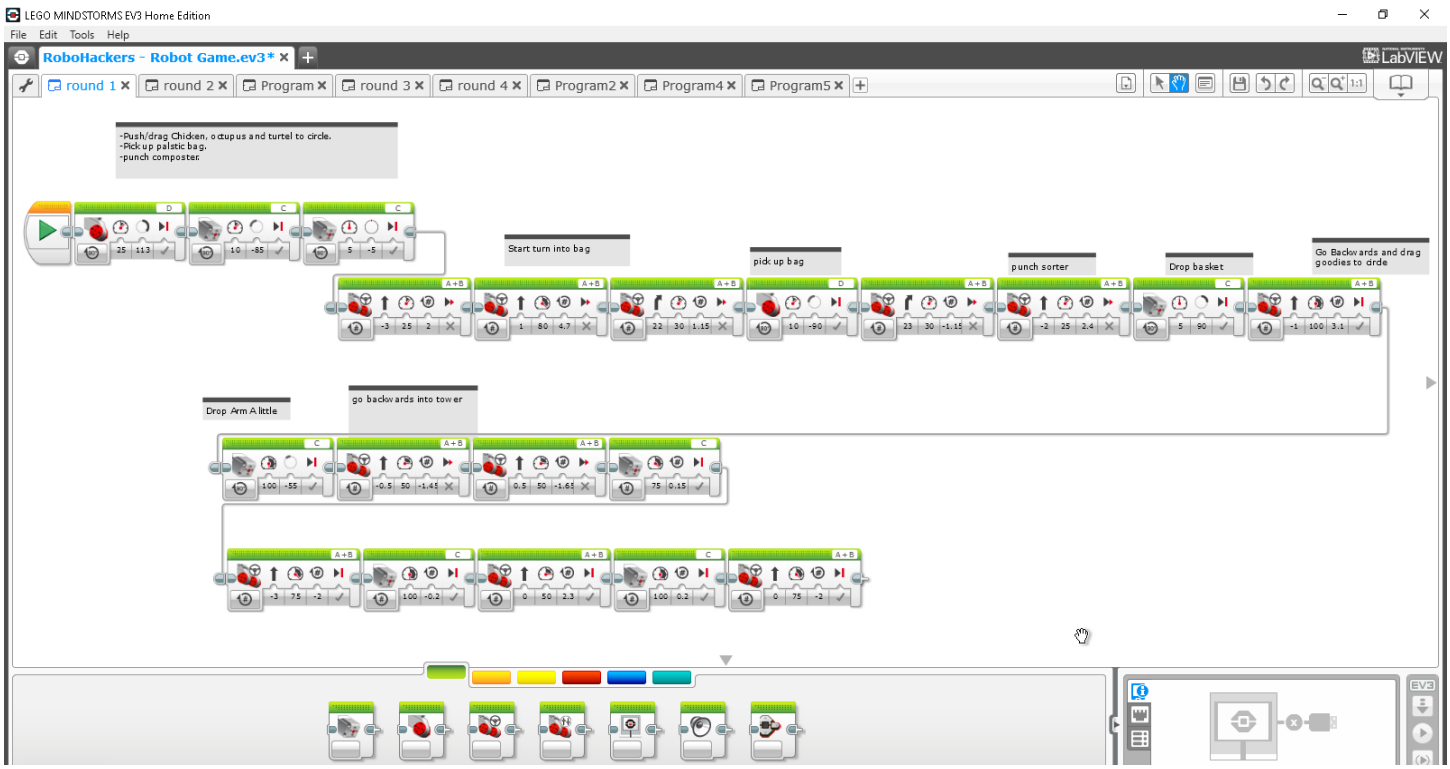




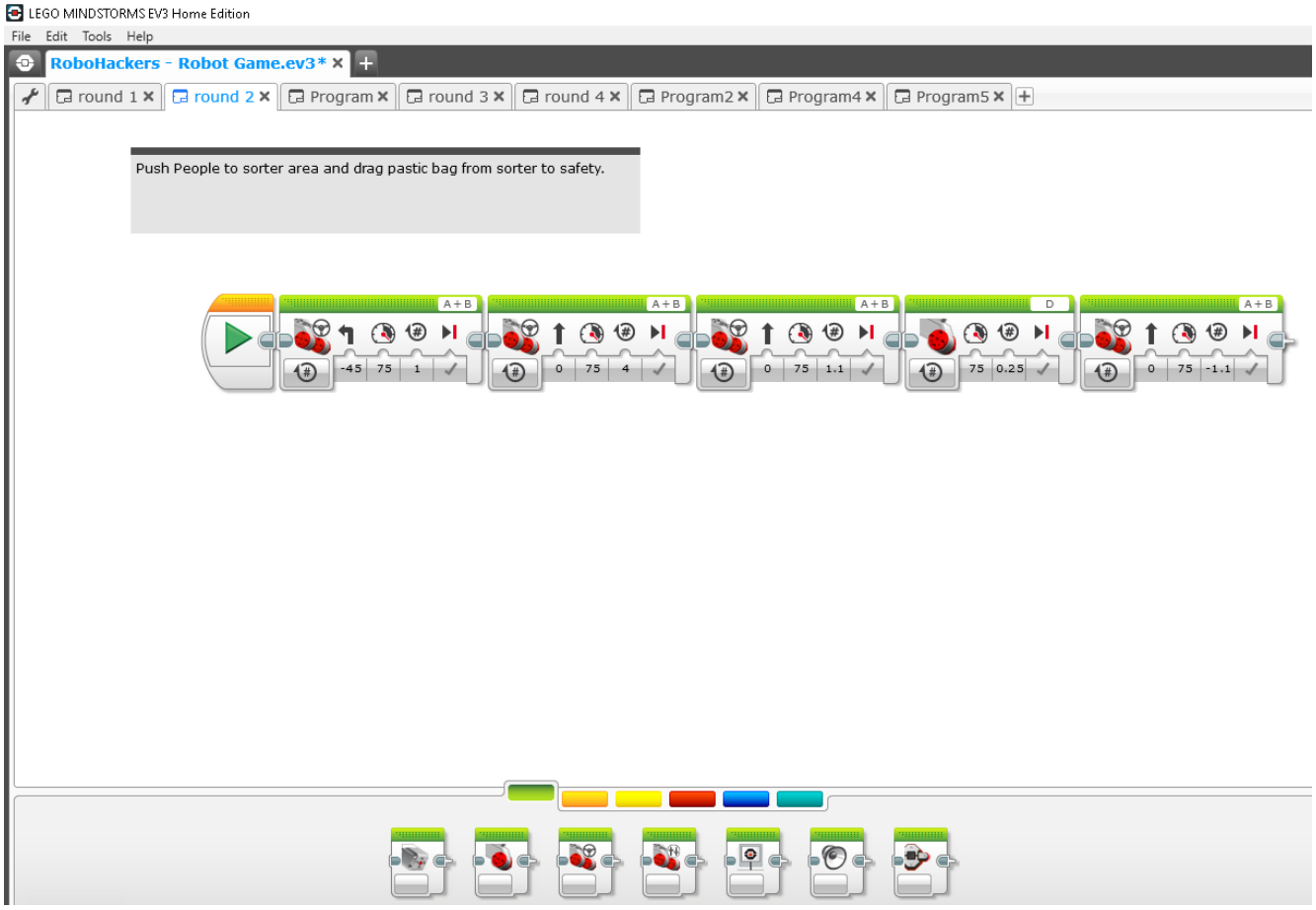

PROGRAMMING

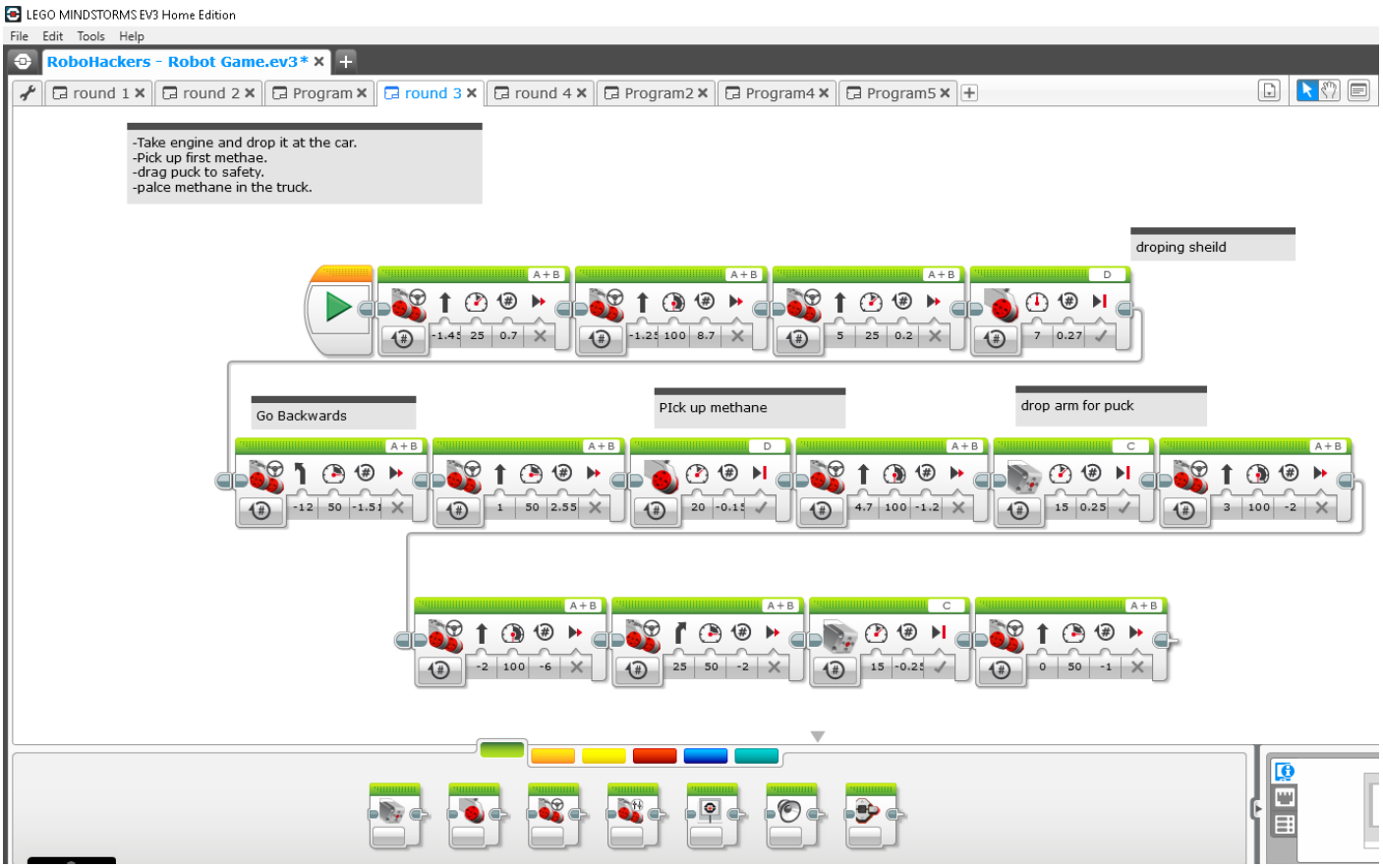







LEGO MINDSTORMS EV3 Home Edition
File Edit Tools Help
RoboHackers - Robot Game.ev3*
round 1
round 2
Program
round 3
round 4
Program2
Program4
Program5
-Push/drag Chicken, octupus and turtel to circle.
-Pick up palstic bag.
-punch composter.
Start turn into bag
pick up bag
punch sorter
Drop basket
Go Backwards and drag goodies to orde
Drop Arm A little
go backwards into tower


LEGO MINDSTORMS EV3 Home Edition
File Edit Tools Help
RoboHackers - Robot Game.ev3*
round 1
round 2
Program
round 3
round 4
Program2
Program4
Program5
Push People to sorter area and drag pastic bag from sorter to safety.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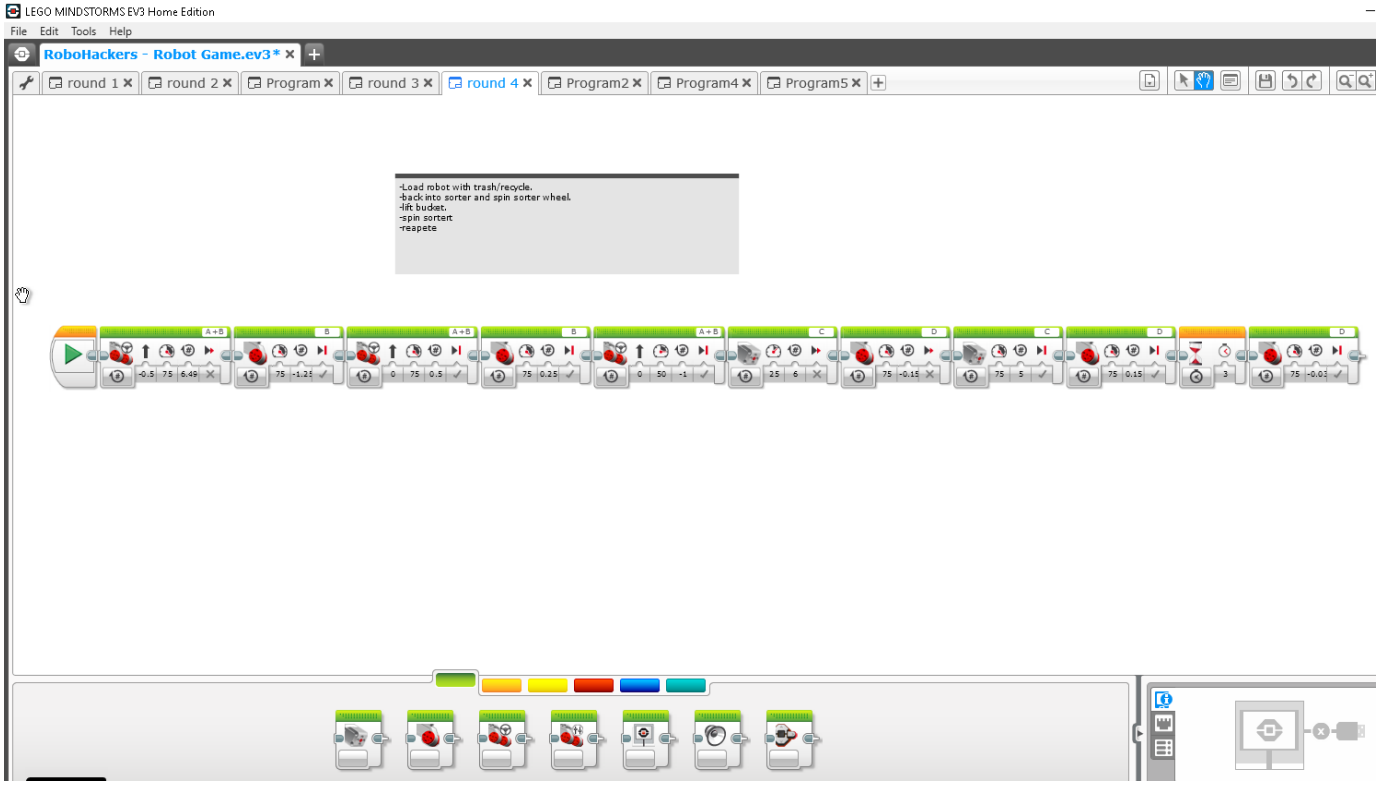
File Edit Tools Help
RoboHackers - Robot Game.ev3*
round 1
round 2
Program
round 3
round 4
Program2
Program4
Program5
-Take engine and drop it at the car.
-Pick up first methae.
-drag puck to safety.
-palce methane in the truck.
droping sheild
Go Backwards
PIck up methane
drop arm for puck


LEGO MINDSTORMS EV3 Home Edition
File Edit Tools Help
RoboHackers - Robot Game.ev3*
round 1
round 2
Program
round 3
round 4
Program2
Program4
Program5
-Load robot with trash/recycle.
-back into sorter and spin sorter wheel.
-lift bucket.
-spin sortert
-reapete

Thank You!