Engineering Notebook

Droid Rage Rewired

#6985

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Team #6985 - Droid Rage Rewired - Team Summary

Abby – 2nd year on team – age 13 – 8th grade – Valders Middle School – 5 years with the Lakeshore FIRST Robotics Program.

Autumn- 2nd year on team -age 15 – 9th grade – Homeschool- 4 years with the Lakeshore FIRST Robotics Program.

James – 2nd year on team – age 14 – 8th grade – Valders Middle School- 9 years with the Lakeshore FIRST Robotics Program.

Joe -2nd year on team – age 14 – 8th grade – Valders Middle School - 2 years with the Lakeshore FIRST Robotics Program.

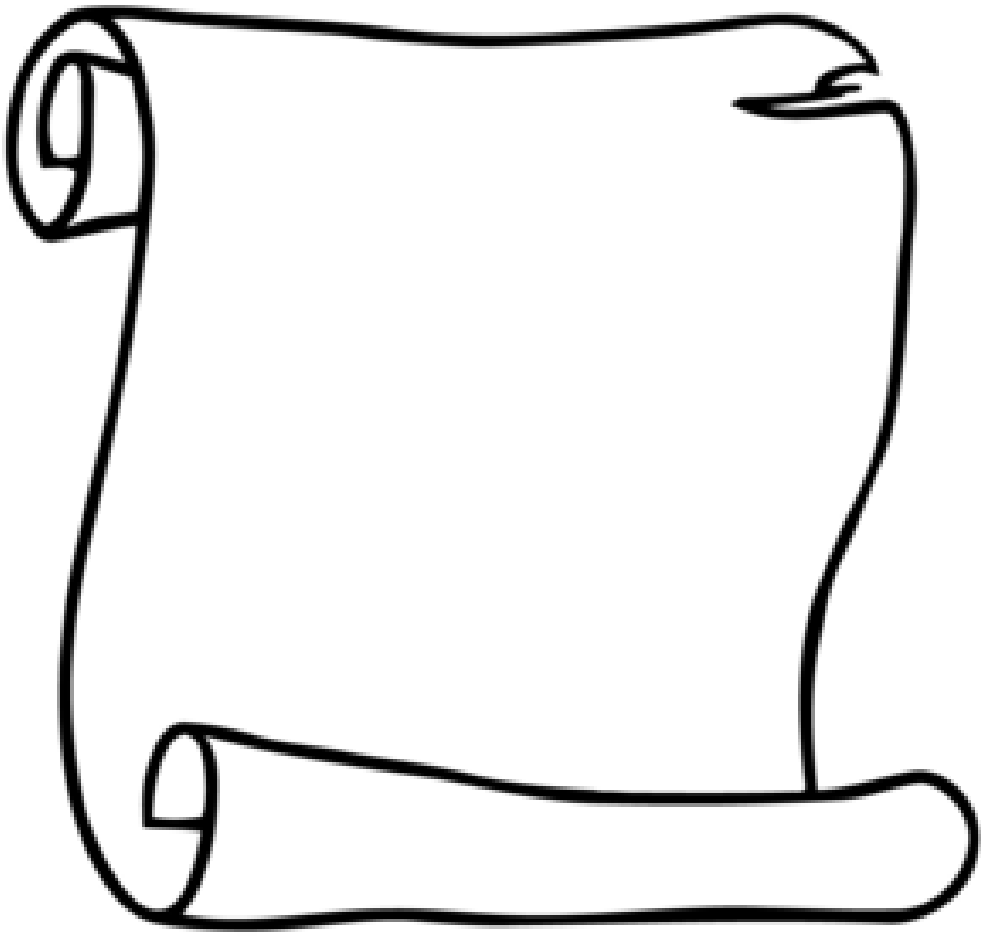
Mitchell – 2nd year on team - age 14 – 8th grade – St. Mary's - 5 years with the Lakeshore FIRST Robotics Program.

Ryan – 2nd year on team – age 15 – 9th grade – Kiel High School – 4 years with the Lakeshore FIRST Robotics Program.

Anna is going on her 8th year with the Lakeshore FIRST Robotics program, 2nd year with this team. Works in B2B for Kohler Company.

Jeff is going on his 5th year with the Lakeshore FIRST Robotics program, 2nd year with this team. He is a manufacturing engineer with the Vollrath Company

Team Bios



Abby

My name is Abby and I am 13. I am in 8th grade. I go to Valders Middle School. I would have to say that math is my favorite subject in school. I have been in FIRST for Five years; three FLL and two in FTC. I played softball for four years, and I am currently playing volleyball. This will be my second year. My hobbies are showing beef cattle and taking projects to the fair. A random fun fact about me is that I am double jointed in my middle finger.

Autumn

My name is Autumn, I am 15 and in 9th grade. I am homeschooled and I love it. My favorite subject in school is spelling. I have been involved in FIRST for four years. This is my fourth year in FTC. I have helped spread the word about FIRST at our FLL Regional at Lakeshore Technical College and at the Manitowoc County fair. I played soccer from kindergarten to fifth grade. My favorite hobbies are crocheting, reading, being outside, sewing, drawing, painting, 4-h, and showing bunnies. I have shown Dutch, Belgian Hare, and Flemish Giants. Some of my projects I took to the fair are a ring toss game, a frog operation game, photography, crocheting, a chalkboard, duct tape items, leather craft, tie dye, paintings, jewelry, Halloween, Christmas, and Easter items. Through 4-h I also helped with the clover cafe at the fair. My favorite fun fact about me runs on my dad's side of the family; my hand can fold in half.

James

My name is James and I am 14. I am in 8th grade and go to Valders Middle School. My older brother and sister are homeschooled. My favorite subject in school is science. My outreach is helping out at the fair in the robotics booth, going to the library for STEM events for the younger kids, and helping at our FLL Regional the Lakeshore FIRST Robotics program puts on at Lakeshore Technical College. I helped watch over the practice matches, and I timed in judging rooms. I have also played football for two years and basketball for one year. I love to do archery; I have been doing it since I was five. I also like being outside in the woods and soaking up the sun. My favorite fun fact about me is I have had stitches between my pinky toe.

Joseph

My name is Joseph, but people call me Joe. I am 14 and in 8th grade. I go to Valders Middle School and I am on the robotics team of Wisconsin. Some things I like to do in my spare time is writing stories or anything that happens in my day. I also like writing my own codes and practicing them and ones that are already created that I find online. This is my second year in robotics. I saw the competition last year, but my brother Chris and I had robots in a separate competition that destroys other people's robots. I had a wedge robot. They let the smaller robots go first and then all the larger robots are put together at the end just for fun. I like working outside and animals. I joined robotics because I see it from the mechanical side and I have to use a lot of that to build our robot with the team. Before robotics I did not do any extracurricular activities. Some of my favorite hobbies are robotics, digging holes, writing with ciphers and codes, and making up random scenarios in my head and seeing what happens to the people in the scenarios. I have fun doing magic tricks and origami. Robotics is probably my favorite thing that I do besides Boy Scouts because I basically write everything that happens, and I sketch all of the robots and the parts we added to it. I love sorting my Legos every time my brother is done with them. Random fun fact about me is I cut my finger in half and now I have half a nail on my left thumb.

Mitchell

My name is Mitchell and I am 13 years old. I am in 7th grade and I go to Holy Family School in Brillion. My favorite subjects in school are math and social studies. I am in 4-H and I have taken bunnies and a photograph to the fair. I have also built a wooden catapult for the fair. I have been in FIRST for five years. I have been in FLL for three years and this is my second year in FTC. I am not really into video games. I like games with strategy. Random fun fact is I love to sort.

Ryan

My name is Ryan and I am 14. I am in 9th grade and go to Kiel High School, but I am on the Valders robotics team. I have been in FLL for one year, and FTC for three years. My favorite subject in school is science. I have been in cross country for four years, and track for one year. My hobbies are running, fishing, video games, biking, going to Madison, and hanging with my family. I also have a younger brother. Random fun fact about me is I love to run.

Anna

Anna is going on her 8th year with the Lakeshore FIRST Robotics program. She is the Director of FLL Jr and Co-Director for Travel for Lakeshore FIRST Robotics Program of Manitowoc County. She has been a Mentor for FLL Jr, FLL, FTC and FRC. She has had 3 of her four daughters go through the program. Anna loves to see the kids grow through all levels of the program and use the skills they learn out in the real world.

Jeff

I am a manufacturing engineer with the Vollrath Company and have been with the FIRST program for 5 years. He was an FLL coach for 2 years and FTC mentor for 3 years. Both of my children are in the program as well. I love to see the kids learn to build the robot and get to see something they built run.

Team Meetings

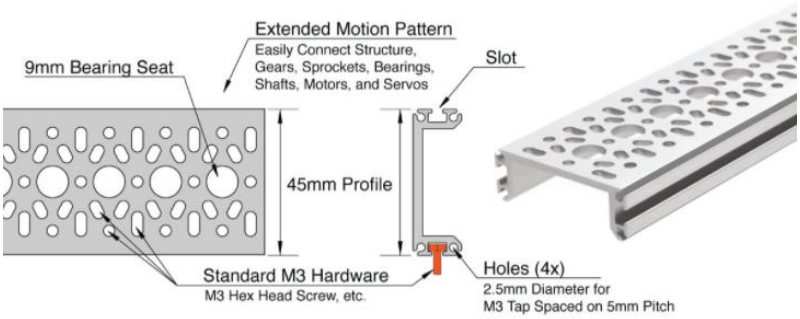
Thursday, August 20,2020, 6-8 P.M.

Attendance: Abby, Autumn, James, Joe, Mitchell, Ryan

What we did:

- As a team we decided to go with mecanum wheels, as long as the wheels are conducive to the challenge
- We talked about what type of cart we wanted for robot/organization
- We learned about docs.rev.com to get information on any rev product we would purchase
- Our team has $2,000 budget this year and we don't have to pay for our own competition
- We are going to try Rev C-channel from Rev instead of Pitsco like we did last year
    - We had issues with Pitsco patterns not lining up from last year

Lessons Learned: "We enjoyed the layout from last year and want to keep the consistency" - Whole Team



Rev.com

Tuesday, September 8, 2020, 6-8 P.M.

Attendance: Abby, Autumn, James, Joe, Mitchell, Ryan

What we did:

- We wrote down contact information for all the team members
- We organized all of our equipment for the season
- We also finished setting up our pit at the robotics center
- We made a list of the parts we were interested in purchasing for the mecanum base
- We went through last years engineering notebook to see what we need to improve

Lessons Learned: "Your parts never stay organized for long" - Mitchell

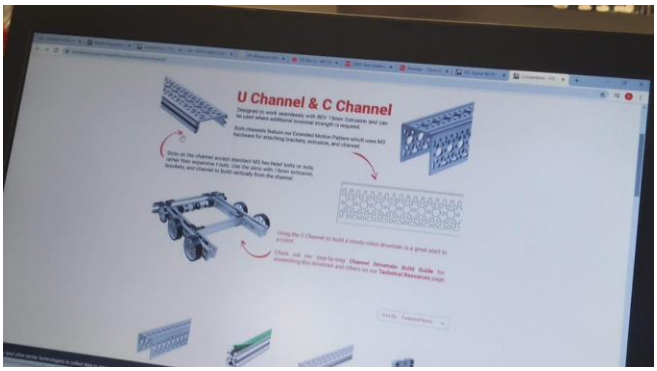
Thursday, September 10, 2020, 6-8 P.M.

Attendance: Abby, Autumn, James, Joe, Mitchell, Ryan

What we did:

- We talked about U channel and C channel
- We continued to learn about the new control hub from REV
  - A mentor showed us how to update the control hub, so we could begin to use it
- We talked about ordering an extra battery and a battery charger
- We looked up how the ultra planetary motors gear ratios affected our wheels
- We want to try to keep our weight as even as possible down the center due to the mecanum wheel
- We wanted to purchase a team thumb drive for all our files

Lessons Learned: "We decided to use lock nuts for all the screws to keep our base together" - James



Kick Off

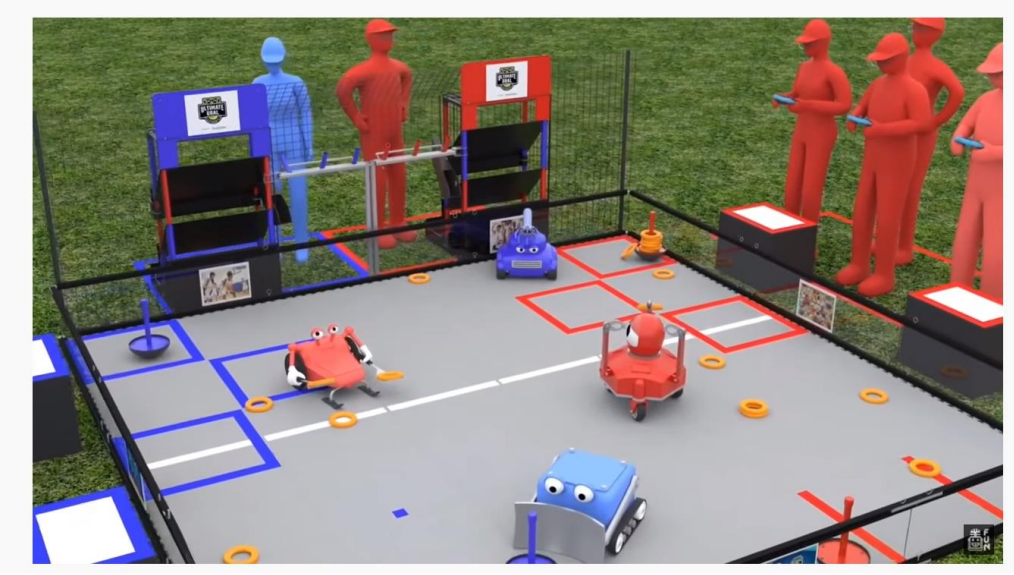
Saturday, September 12, 2020 9-noon

Attendance: Abby, James, Joe, Mitchell, Ryan

What we did:

- We watched the kick off video
- We went over the rules
- We were excited to use mecanum wheels this year, advance our teams knowledge
- We brainstormed ideas of what we wanted to build the robot out of
- We also went over goals we wanted to achieve for the season
    - Use mecanum wheels and learn how to program them
    - To make a straight robot
    - Go over covid protocall
    - To make our engineering notebook better than last year
    - Have more people drafting to have more 3D printed pieces CAD'd
- The team decided to use the new control hub and the ultra planetary motors from REV Robotics
- We wanted to order C and U channel to make a straighter robot

Lessons Learned: "We could use zoom to include students who had to be virtual" - Ryan



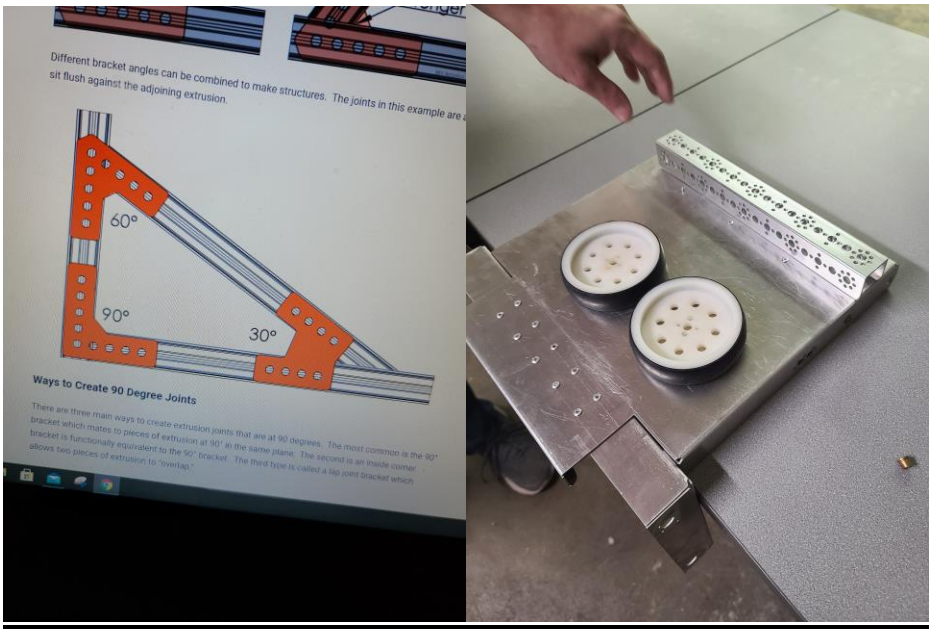
Monday, September 14, 2020, 6-8 P.M.

Attendance: Abby, Autumn, James, Joe, Mitchell, Ryan

What we did:

- We decide to try a two wheel prototype for a shooter
    - We discussed the different wheel types
        - Compliant wheels - was to squishy
        - 90mm Stealth wheels - looked like it might be overkill and we currently did not have any on hand
        - Tetrix Max wheels - really like how it handled the rings
- We talked about the different types of brackets for the C channel
    - 15mm 90 degree plastic bracket
    - 15mm 45 degree plastic bracket
    - 15mm 30 degree plastic bracket
- There were multiple different brackets, but we decided to go with the 90 degree bracket

Lessons Learned: “Make sure you research all the different types of parts when you are building your base or any prototype because there are many different materials and shapes” - Abby



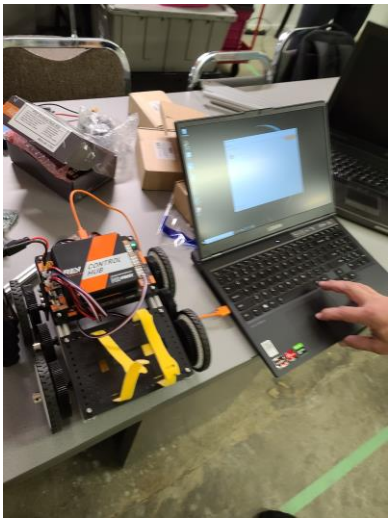
Thursday, September 17, 2020, 6-8 P.M.

Attendance: Abby, Autumn, James, Joe, Mitchell, Ryan

What we did:

- We found there were different brackets for the ultra planetary motors
- We picked two to try
    - We 3D printed the ultra planetary long reach bracket and the bent mounting bracket so we could try both before purchasing
- We found out the bent mounting bracket worked the best with how we mounted our motors
    - We ordered the bent mounting brackets
- We continued to learn about the new control hub

Lessons Learned: "3D printing is becoming easier for the team, with the more parts we keep making" - Joe



UltraPlanetary Long Reach Mounting Bracket - 2 Pack

UltraPlanetary Bent Mounting Bracket - 4 Pack

Saturday, September 19, 2020, 9-noon.

Attendance: Abby, Autumn, James, Joe, Mitchell, Ryan

What we did:

- We cut our prototype base out of U channel with a sawzall
- We filed the pieces we cut for the base
- We started to work on the shooter
    - We had to measure how big the ring was
    - We also had to space out our wheels for the shooter based off of the rings pliability
- We were struggling with how to support the motors and wheels without getting in the way of the rings
    - The motors were vibrating so bad without supporting the wheels hit the metal on the bottom
    - We took apart the shooter and started to rebuilt again using different metal U channel that was not as bent
        - We noticed a huge difference right away

Lessons Learned: "We learned how important it was to secure the motors on the shooter even if it is hard to reach" - James



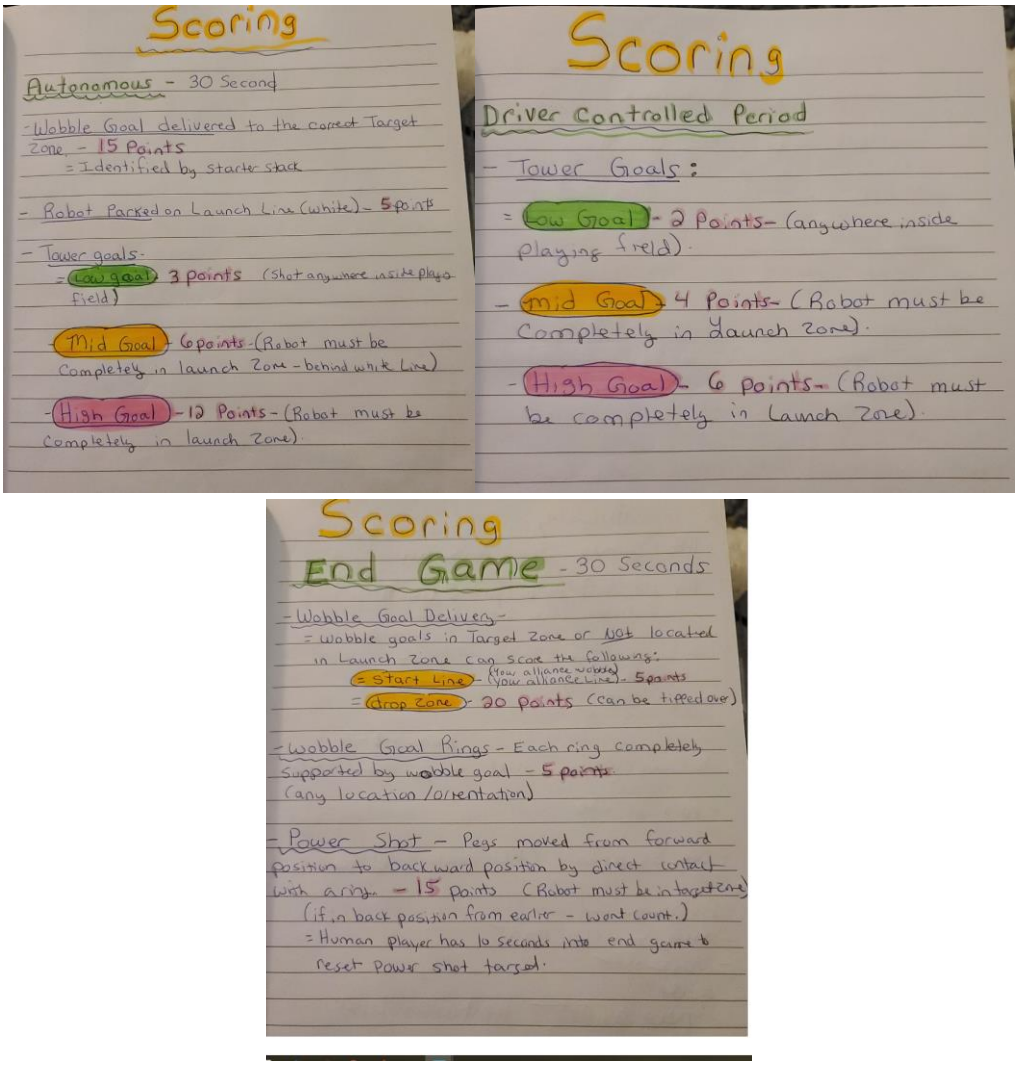
Monday, September 21, 2020, 6-8 P.M.

Attendance: Abby, Autumn,

What we did:

- We worked on the engineering notebook
- We talked about the point values of the game
- We discussed strategy
    - We found ways to get points in autonomous, driver control, and endgame
    - Everybody did not agree

Lessons Learned: "Google Docs did not work in the robotics building, so we had to contact our IT" - Abby



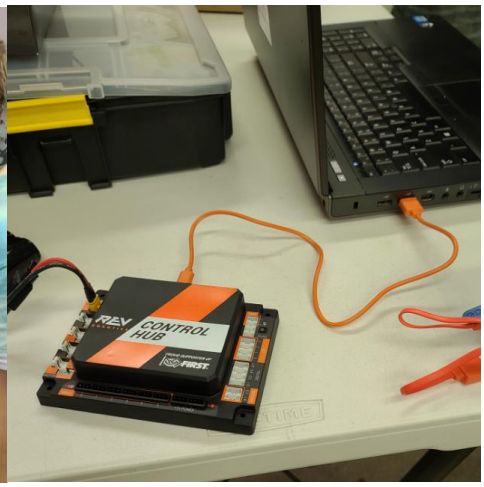
Thursday, September 24, 2020, 6-8 P.M.

Attendance: Abby, Autumn, James, Joe, Mitchell

What we did:

- We went over more details with a mentor about the control hub
- We started googling about block programming
- We continued to work on the prototype base design
- We continued to work on the notebook

Lessons Learned: “The orange cable for the control hub is very important for updating” - Autumn



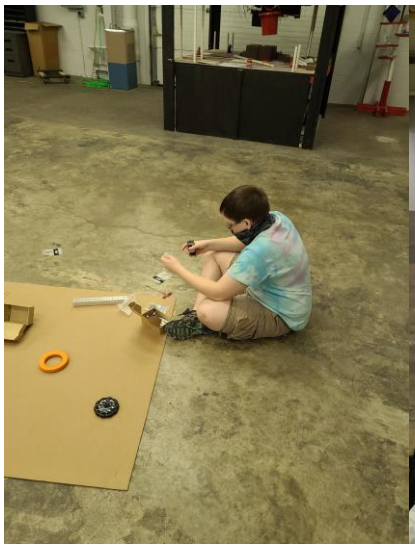
Saturday, September 26, 2020, 9-noon

Attendance: Abby, James, Joe, Mitchell

What we did:

- We put together the new ultra planetary motors
- We talked about a shooter and intake that resembles a dustpan
- Items for shooter and intake we need to order
    - T-slot screws
    - C channel
    - Surgical tubing

Lessons Learned: "We need T-slot screws to work with the C channel properly"
- Joe



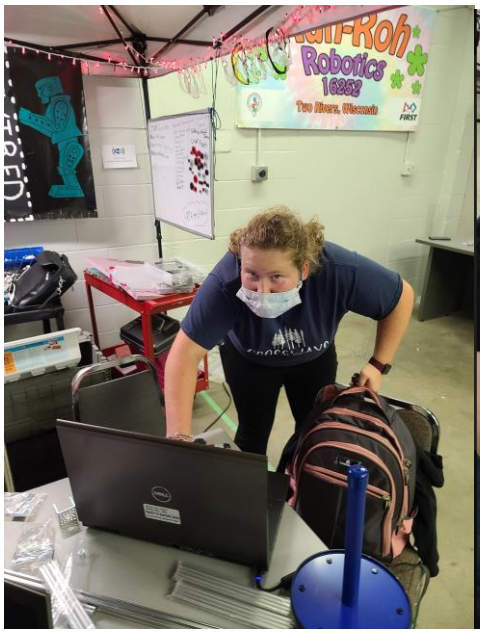
Monday, September 28, 2020, 6-8 P.M.

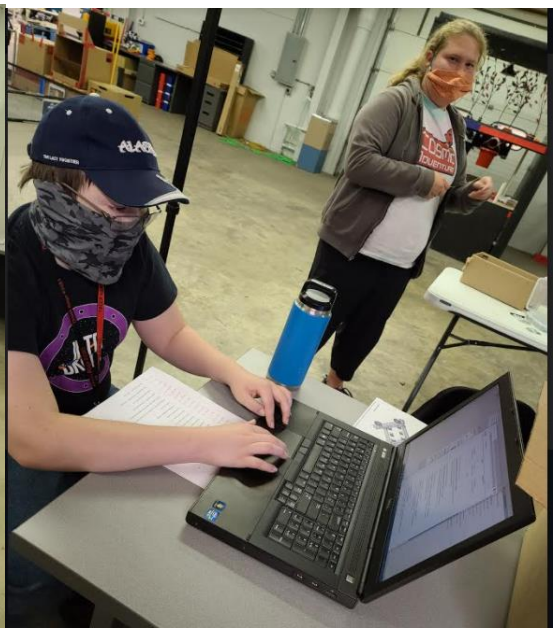
Attendance: Abby, Autumn, James, Joe, Mitchell

What we did:

- We made a cardboard prototype of the intake and the shooter
    - We discussed what wheels we were going to use
    - We are currently using motors from last year, but we want to use the ultra planetary motors
- We started to make a shooter out of parts from last year
- We continued to work on the prototype base until the C channel comes in
- We started to work on CAD'ing the parts of the base

Lessons Learned: "A lot of the base parts, you can find the CAD files on REVRobotics.com" - Mitchell





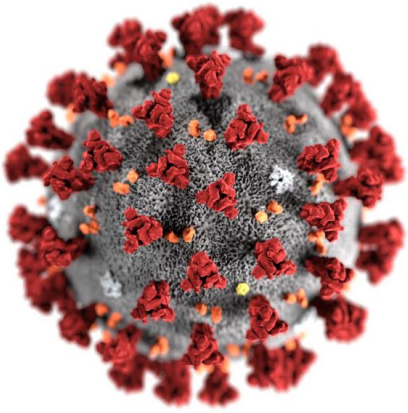
Thursday, October 1, 2020, 6-8 P.M.

Attendance: Abby, Autumn, James, Joe, Mitchell

What we did:

- Due to Covid numbers increasing in the state we chose to go virtual for a few weeks
- Packed bins for each student to take home
    - Bins filled with prototype materials and tools
- We continued to CAD the base of the robot
- We discussed to do Zoom meetings every Thursday until covid numbers get better in Wisconsin

Lesson Learned: "With covid, we all learned to think outside of the box to get things done" - Whole Team



Thursday, October 8, 2020, 6 P.M. - Zoom call

Attendance: Abby, Autumn, James, Joe

What we did:

- We talked about how school/online learning was going for everybody
- Autumn worked on the base with her dad's help and tools
- Most of the team did not have time to work on prototypes

Lessons Learned: "It is hard to focus when you don't have a set schedule"
- Abby

Thursday, October 15, 2020, 6 P.M. - Zoom call

Attendance: Autumn, James, Joe

What we did:

- We discussed what parts we would need from Rev to finish the base
  - Rev-41-1326 = through bore bearing short
  - Rev-41-1329 = through bore bearing long
  - Rev-41-1338 = 10in. tooth #25 sprocket
  - Rev-41-1305 = 15mm 90 degree plastic brackets
- We received the second half of our funding, so we could continue to order essential parts

Lesson Learned: “Write the part numbers down to keep track of what parts our robot is made out of incase we need to order more” - James

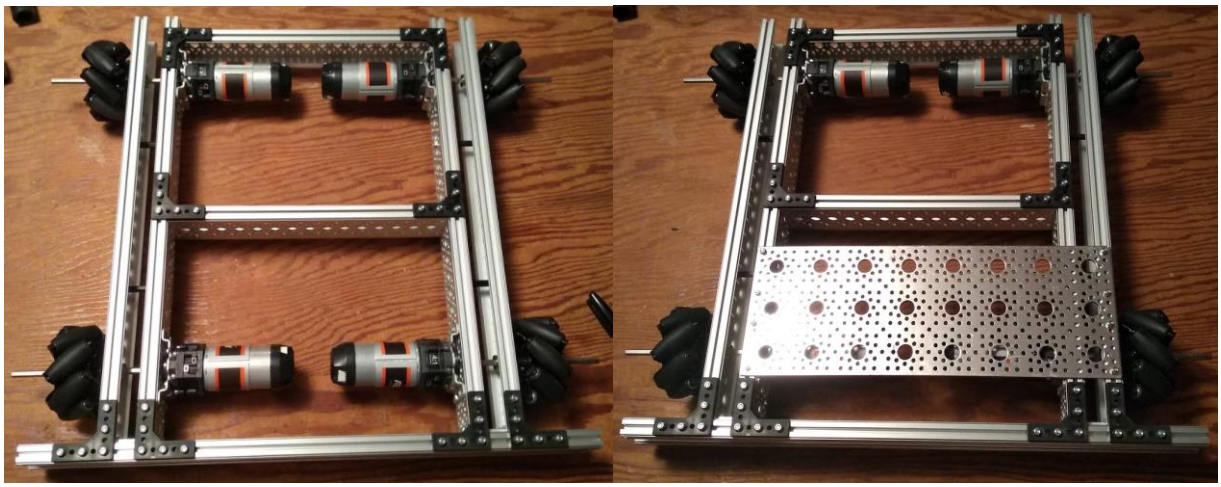
Saturday, November 7, 2020, 9- noon

Attendance: Autumn, Mitchell

What we did:

- We continued to CAD parts for the robot
- We finished making the base out of the new parts

Lesson Learned: “Make sure you have the right size allen wrench for the set screw on the wheels” - Autumn



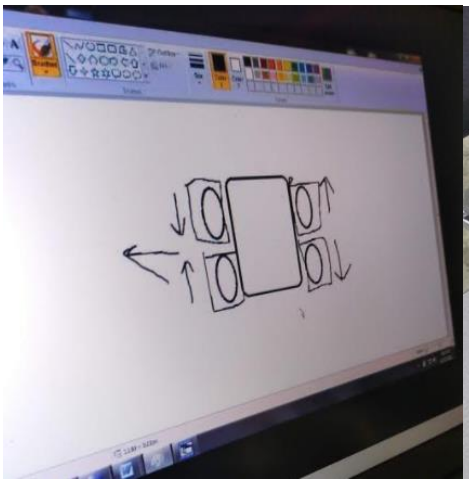
Monday, November 9, 2020, 6-8 P.M.

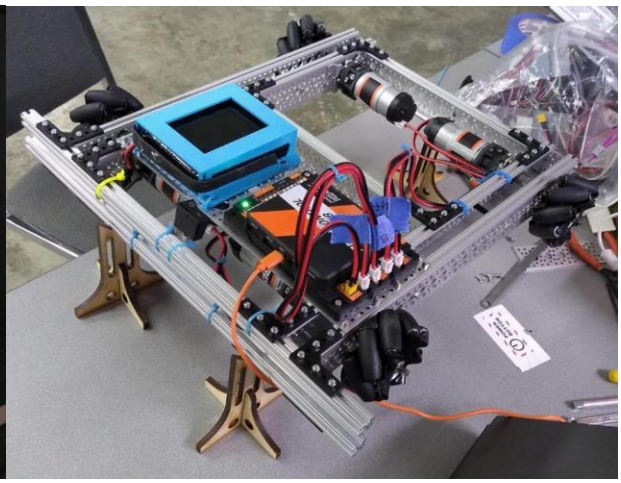
Attendance: Abby, Autumn, James, Joe, Mitchell

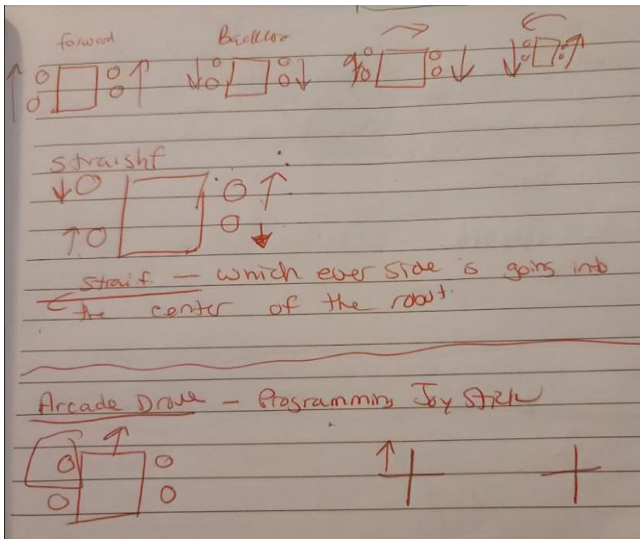
What we did:

- We started to work on programming
  - Watched several videos on block programming
  - We started to try and create our own program
- We continued to work on shooter and intake prototypes
- We continued to CAD the robot

Lesson Learned: "We learned what the different colored blocks in the program represented" - Mitchell







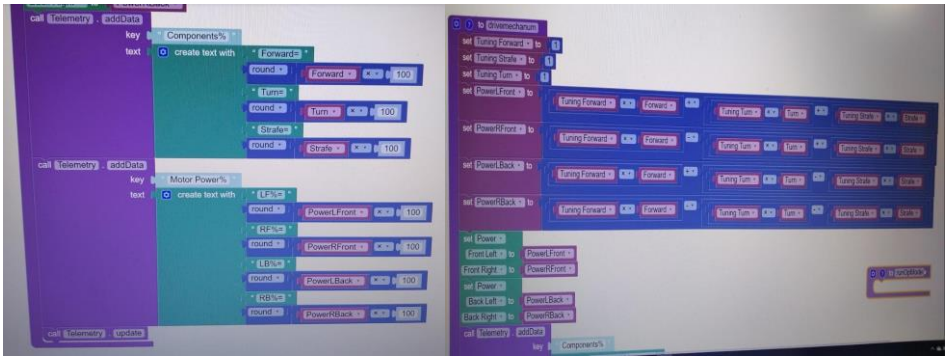
Thursday, November 12, 2020, 6-8 P.M.

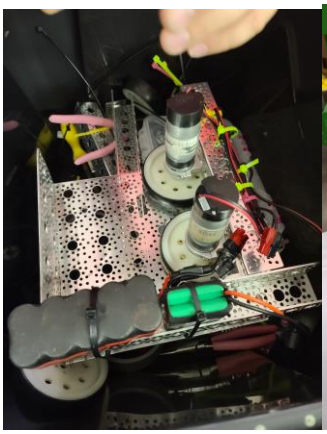
Attendance: Abby, Autumn, James, Joe, Mitchell, Ryan

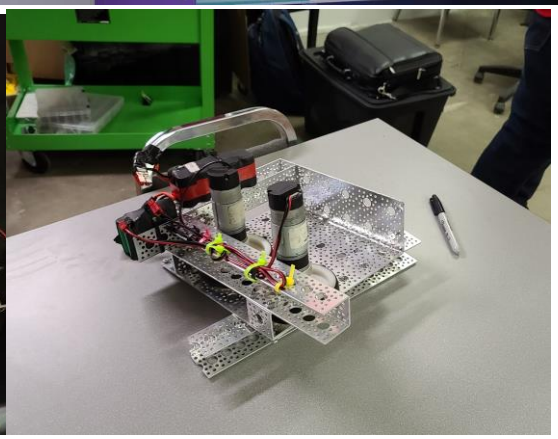
What we did:

- We tested the prototype shooter to see how far it shoots the rings
  - We really liked the design
  - We want to try it with the ultra planetary motors to have more speed and distance
- We continued to figure out how to program the base to move
- We wrote down the right ports with the correct motors to make programming easier
  - Right Front[RF] - port 3
  - Left Front[LF] - port 2
  - Left Back[LB] - port 1
  - Right Back[RB] - port 0
  - Blocks programming website: 192.168.43.1:8080

Lesson Learned: “Make sure to put the right type and length of screws in the motors” - Joe







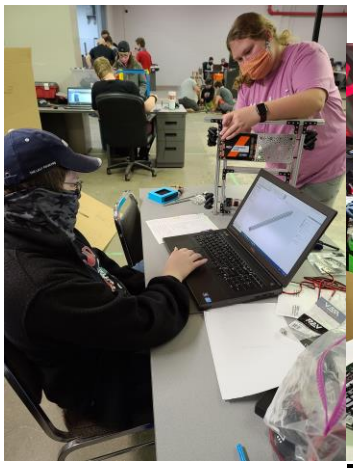
Saturday, November 14, 2020, 9-noon

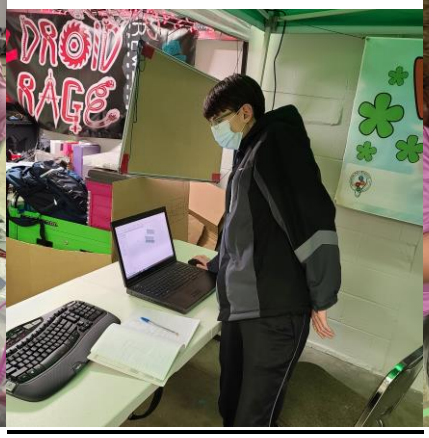
Attendance: Autumn, Ryan

What we did:

- We worked on completed the base
  - We attached the new control hub and the battery case to the robot
  - We wired the robot
    - We wired the motors and the battery to the control hub
  - We used the label maker to label each motor cable to make programming easier "we learned this the hard way last year"
- We improved and mounted the prototype shooter
  - We added more bracing to help stabilize the wheels when they spin
- We continued to CAD the new base
  - To bend it out of aluminum in the future

Lesson Learned: "Motor interprets any negative values as backwards" - Autumn





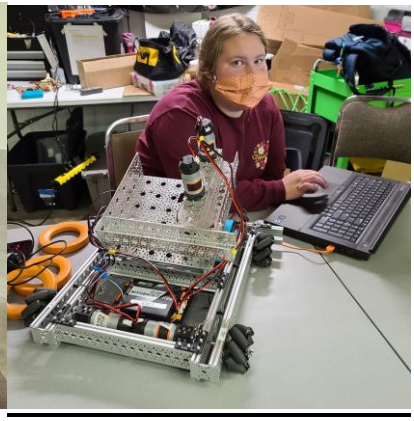
Monday, November 16, 2020, 6-8 P.M.

Attendance: Autumn, Joe, Ryan

What we did:

- We worked on the motors
    - We had to take apart the motors because they did not spin
        - We had the wrong type and length of screw in the motor
    - We tested each motor to make sure they all run properly
- We took the polycarb prototype of the intake
    - We discussed where we wanted to attach the intake
- We started discussing how we wanted to get the rings to the shooter
    - We talked about using the orange poly cord in a conveyor system way
    - We also talked about using more shafts with surgical tubing with a belt pulley system

Lesson Learned: "Pay attention to the type of screws before putting the motors together" - Ryan

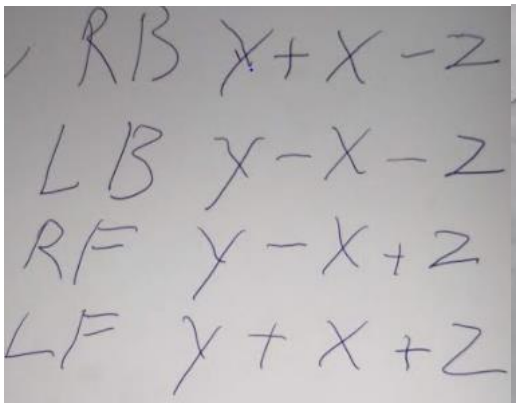
Thursday, November 19, 2020, 6-8 P.M.

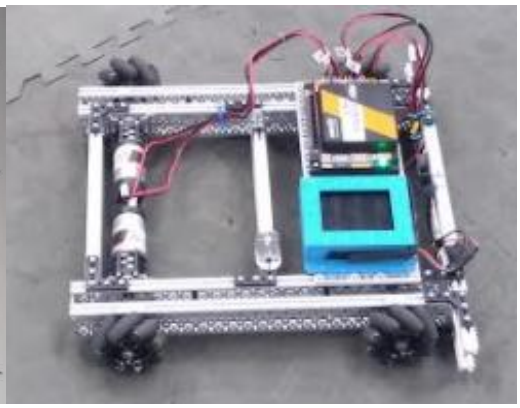
Attendance: Autumn, James, Joe, Mitchell, Ryan

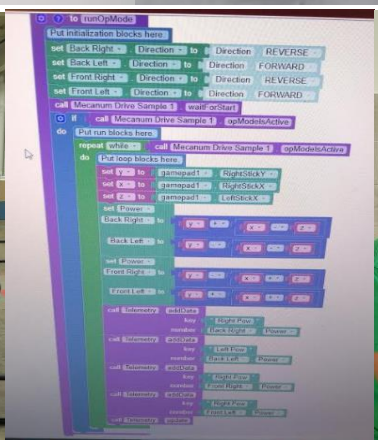
What we did:

- An Alumni helped us make the code more simplistic for the robot to understand
  - Moving forward and back - right joystick y axis
  - Strafing - right joystick x axis
  - Turning - left joystick x axis
  - We used the variables x, y, and z
    - Set y to the right joystick y
    - Set x to the right joystick x
    - Set z to the left joystick x
- The motor interprets any negative value as backward

Lesson Learned: "Using X, Y and Z helps keep the code more simple and short"
- Autumn







Saturday, November 21, 2020, 9-noon

Attendance: Autumn, James, Joe, Mitchell, Ryan

What we did:

- We created an autonomous code where the robot moved forward for 2 seconds
- We learned how to use encoders for programing autonomous with accuracy
- We learned there were many different types of different ways to use an encoder cable
- We continued to CAD the base and the shooter
- We continued to work on the engineering notebook
- We discussed scheduling because of the upcoming holiday and covid
    - The next meeting will be December 7th

Lesson Learned: “Encoder cables are important for doing autonomous” - Mitchell

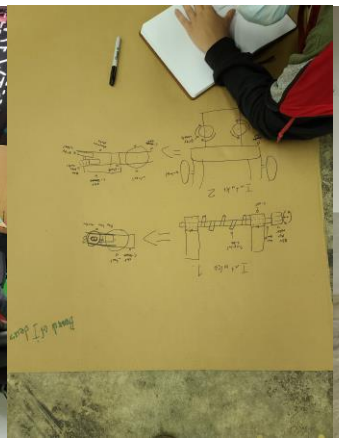
Monday, December 7, 2020, 6-8 P.M.

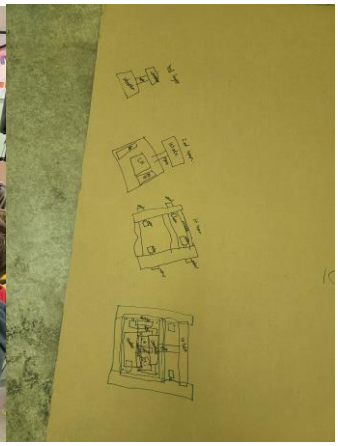
Attendance: Autumn, James, Joe, Mitchell, Ryan

What we did:

- Getting the intake attached to the robot was a priority
- We talked more about the orange poly cord and where to put them
    - We talked about 3D printed rollers for the orange poly cord to revolve on
- We updated the control hub and the expansion hub
    - We had trouble connecting the expansion hub with the robot configuration
    - A team member from Functions helped us connect the expansion hub
- We continued to work on the engineering notebook
- We continued to work on CAD

Lesson Learned: "You use a heat gun to melt the orange poly bands together"
- James





Thursday, December 10, 2020, 6-8 P.M.

Attendance: Autumn, James, Joe, Mitchell, Ryan

What we did:

- We measured and cut Lexan to use for the expansion hub
    - We had to do lots of filing for the Lexan to fit just right
- We attached the expansion hub to the Lexan on the bottom of the robot base
- We continued to sketch ideas on how to transfer the rings from the intake to the shooter
- We discussed there would be no meeting on Saturday December 12th, due to the Fll Jr. expo zoom calls

Lesson Learned: "If you cut straighter, you don't have to file as much" - Joe



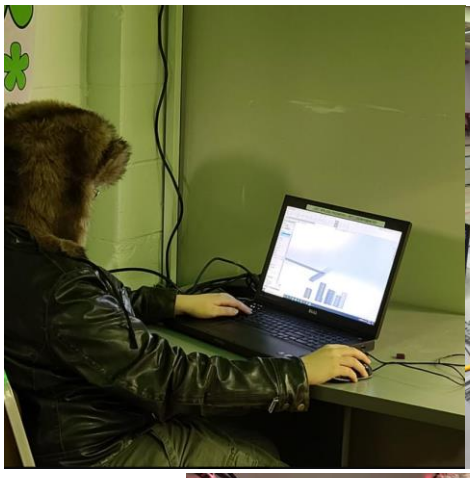
Monday, December 14, 2020, 6-8 P.M.

Attendance: Autumn, Mitchell, Ryan

What we did:

- We ordered the orange poly cord
- We continued to CAD the base
    - We continued to find the parts CAd'd from Rev and added them to the assembly
- We continued to work on the engineering notebook
- We programmed the base code

Lesson Learned: "We learned the importance of using a caliper, so we don't have to remeasure" - Ryan



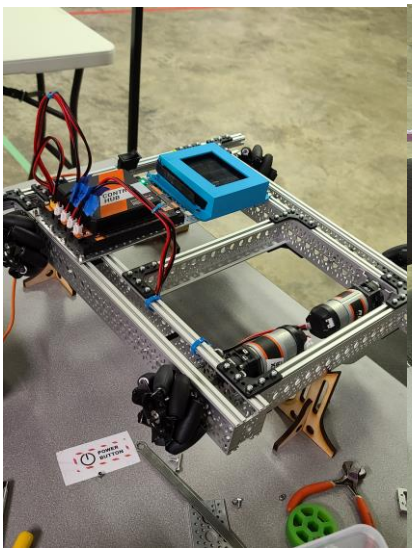
Thursday, December 17, 2020, 6-8 P.M.

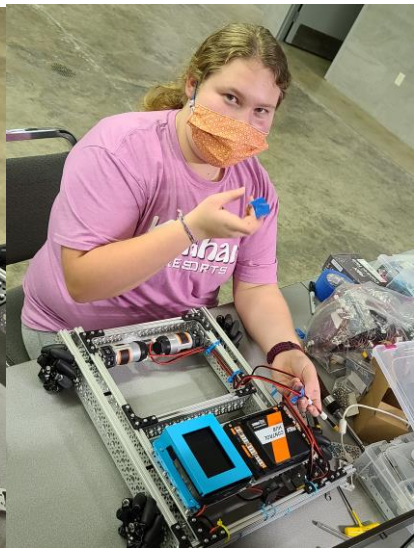
Attendance: Autumn, James, Joe, Mitchell, Ryan

What we did:

- We mounted the Lexan on the bottom of the robot for the expansion hub
    - It took several attempts to make it fit
    - We had to file a lot
- We wired the expansion hub
- We labeled all of the motors with the label maker
- We came up with ideas for the power switch
    - After a while they stopped working
- The 0.5 metric allen wrench came in, so we could tighten our wheels

Lesson Learned: “Make sure you cut the Lexan straight, so you don’t have to file as much” - James





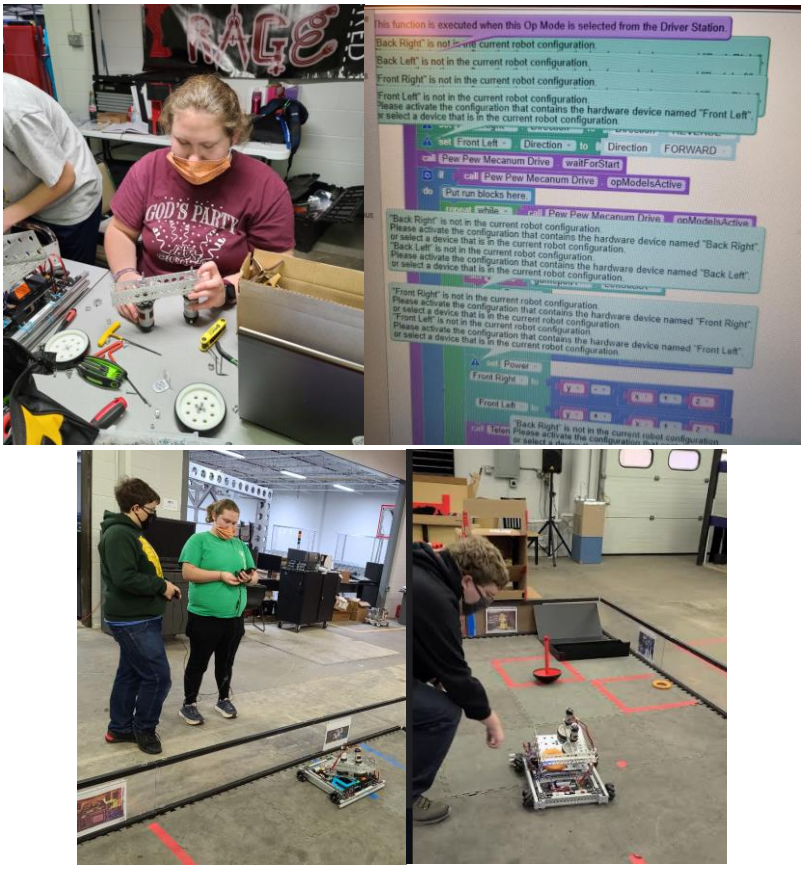
Saturday, December 19, 2020, 9-noon

Attendance: Autumn, James, Joe, Mitchell, Ryan

What we did:

- We continued to improve the shooter
- We added more support for the shooter motors
    - The shafts kept falling out of the motors
        - We added shaft collars and brackets
- We CAD'd the bearings for the intake
- We continued to work on the engineering notebook
- We programmed the shooter
- We created a new configuration

Lesson Learned: "Make sure you label your motors correctly in your configuration" - Autumn



Holiday Break until January 4, 2021

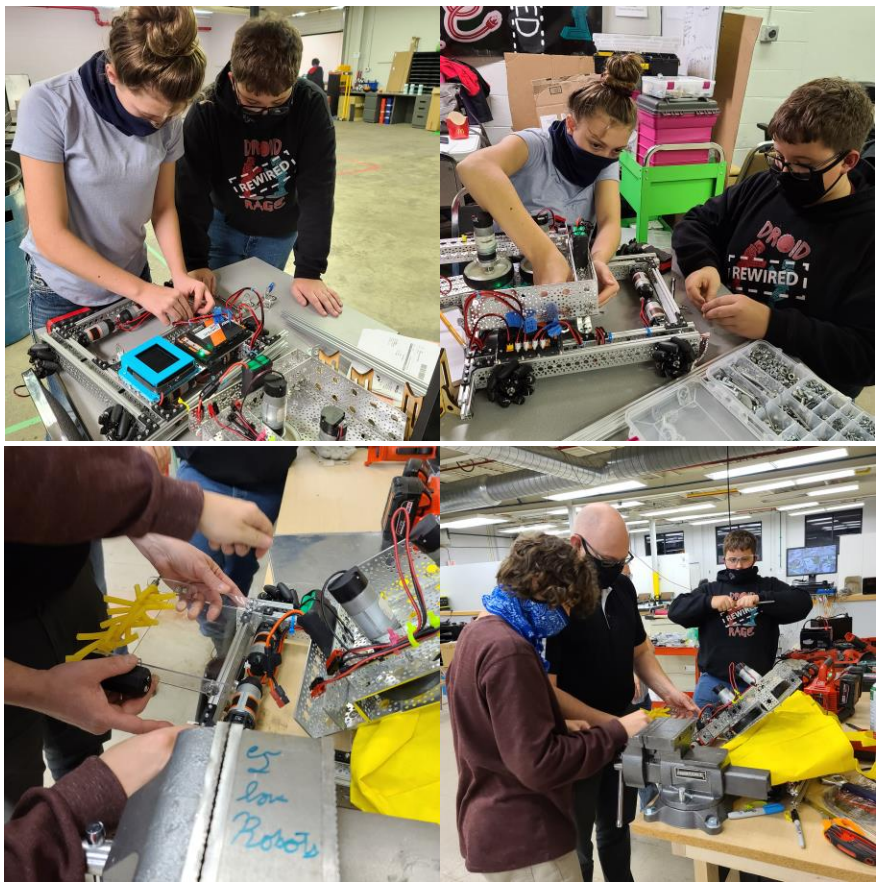
Monday, January 4, 2021, 6-8 P.M.

Attendance: Autumn, Joe, Ryan

What we did:

- We attached the prototype intake to the robot
    - We used Lexan instead of cardboard
    - Drilling the holes for the shafts are more challenging than we thought
- We reattached the shooter to the robot
    - We had to test and get it at the right angle
- After the angle was right, we started to CAD the center piece

Lesson Learned: "There are built in set screws in the ultra planetary motors"
- Ryan



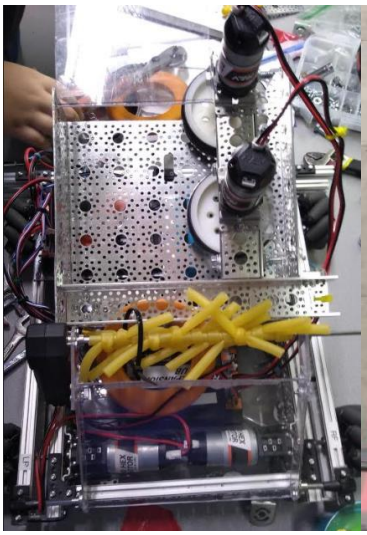
Thursday, January 7, 2021, 6-8 P.M.

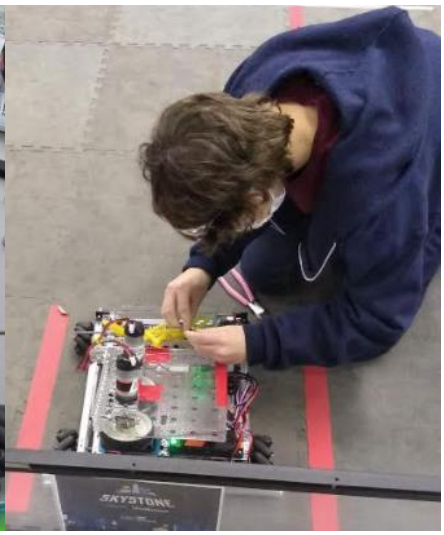
Attendance: Autumn, James, Joe

What we did:

- We continued to fine tune the intake
    - We tried different sizes of surgical tubing, but the small one works better
- We tested the intake to see how well the shaft spun and how the surgical tubing picked up the rings
- We had to get the angle right on the intake, so the flow of the rings was smooth

Lesson Learned: “Surgical tubing varies on the texture, grip, and flexibility” - Joe





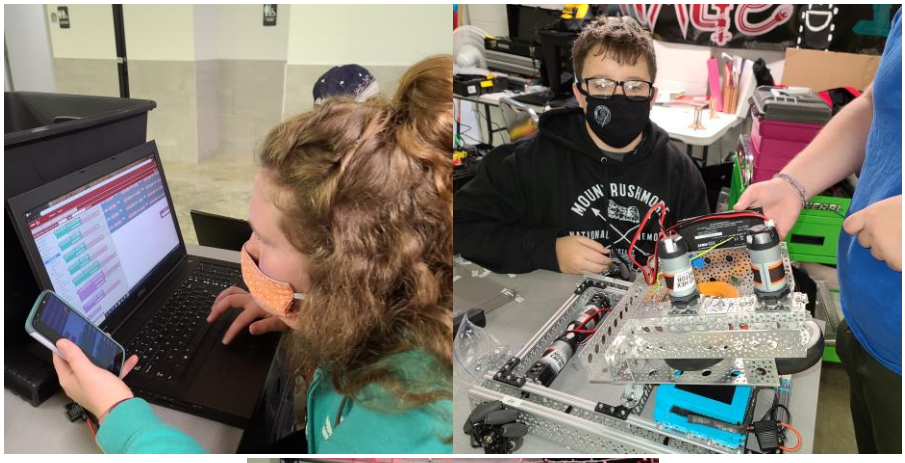
Saturday, January 9, 2021, 9-noon

Attendance: Autumn, James, Joe, Ryan

What we did:

- We chose to use three spindles to get from the intake to the shooter, instead of using the orange poly cords
- We measured the different shaft sizes to make them fit properly
- We continued to CAD the shooter for future bending
    - We planned on make the shooter out of aluminium
- We added surgical tubing to the next three spindles

Lesson Learned: “Even if a tool is new and on clearance, doesn’t make it a good tool to use” - James



Tuesday, January 12, 2021, 6-8 P.M.

Attendance: Autumn, James, Joe, Mitchell

What we did:

- We 3D printed the center piece for the robot
  - We used a caliper to measure the size and angles, it took many tries
  - It will be a 42 hour print
- We ordered 12 volt LED's for our robot
  - It came with a PWM cable and a 7 pin adaptor cable
  - We watched many youtube videos to determine what we would need
- We looked up the Rev hex shaft collars [5m x 75mm hex sleeve] and we ordered them

Lesson Learned: "It's easier to keep a list of what you need on a white board in the pit" - Mitchell

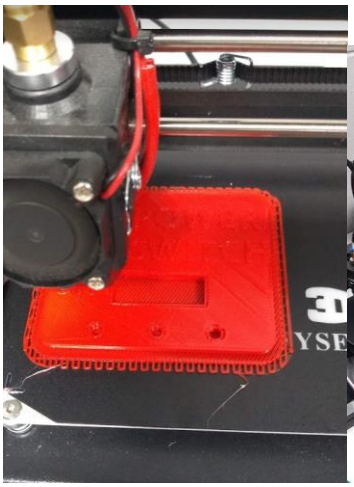
Saturday, January 16, 2021, 9-4 P.M.

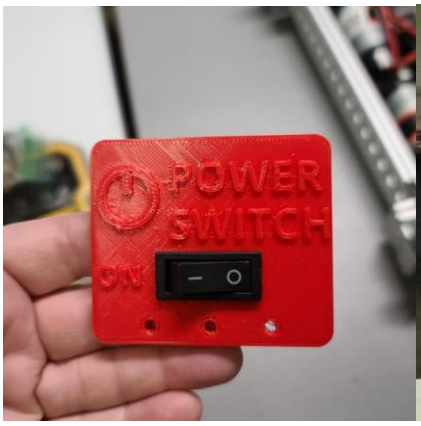
Attendance: Autumn, James, Joe, Ryan

What we did:

- We learned how to print on the 3D printer.
    - ABS filament - stronger, but is has a small temperature range
        - Put 3D printer cover on to keep heat in
    - PLA filament - weaker, but more flexible with temperatures
        - Take cover off because it will overheat and peel away from the bed of the printer
- We 3D printed the robot power switch
- We fixed our white board with duct tape to match the team colors
- We continued to CAD

Lesson Learned: “Duct tape art was very relaxing” - Autumn



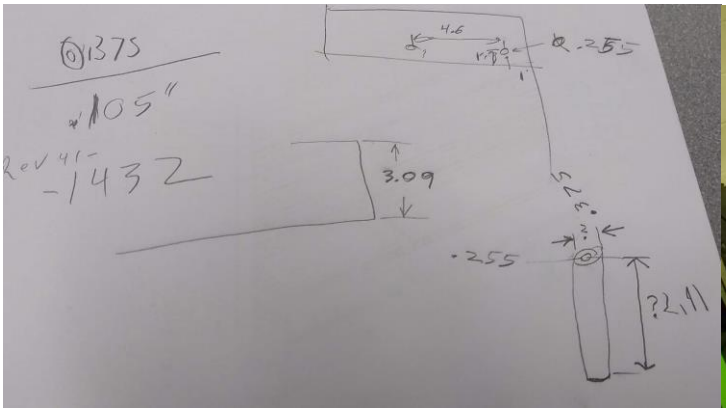
Tuesday, January 19, 2021, 6-8 P.M.

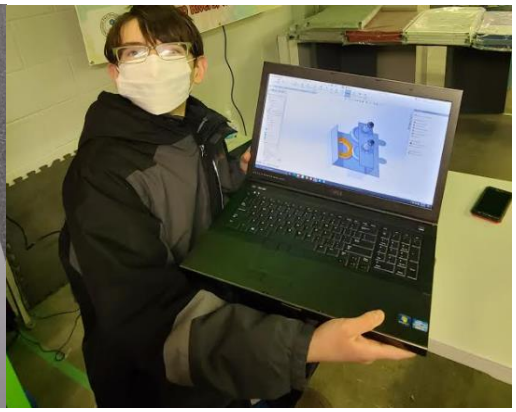
Attendance: Abby, Autumn, James, Joe, Mitchell, Ryan

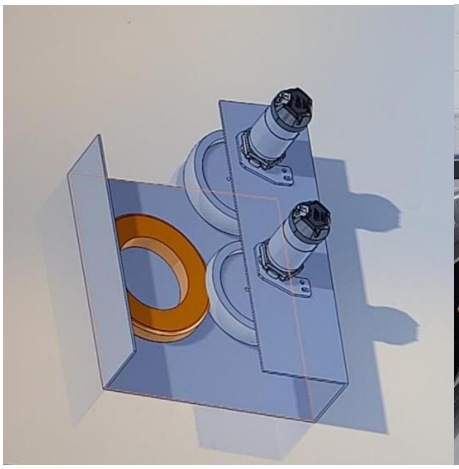
What we did:

- We took the intake off of the 3D printer and noticed it had a slight bow
    - Once we put the shaft in it straightened itself out
- We assembled the 3D printed prototype
- We drafted the middle plate to the robot
- We finished the shooter in CAD
- We continued to CAD and assemble the robot
- We worked on the engineering notebook
- We helped another team with their notebook
- We took everyones pictures for the bios in the notebook

Lesson Learned: "When using a caliper, do not lean one way or the other, it will change the numbers" - James







Saturday, January 23, 2021, 9-4 P.M.

Attendance: Abby, Autumn, James, Joe, Mitchell, Ryan

What we did:

- The toolboxes came in
    - We organized/cleaned the pit
    - We organized the tool box
        - We got rid of 5 bins worth of stuff into one toolbox
        - It took a long time to go through everything
- We drove the robot around to get used to driving
- We CAD'd the the middle section from intake to shooter
- We also continued to CAD the robot base
- We discussed CADing wheel covers with our team number on it

Lesson Learned: "When you clean, you can find things you never knew you had" - Joe

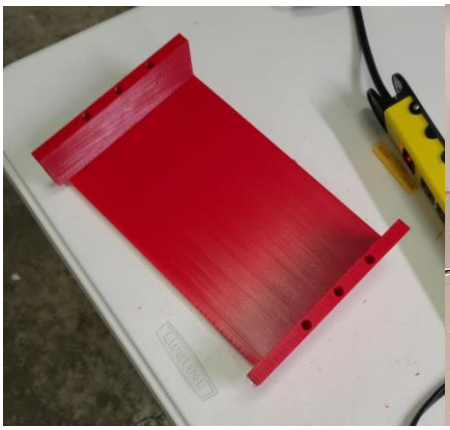
Tuesday, January 26, 2021, 6-8 P.M.

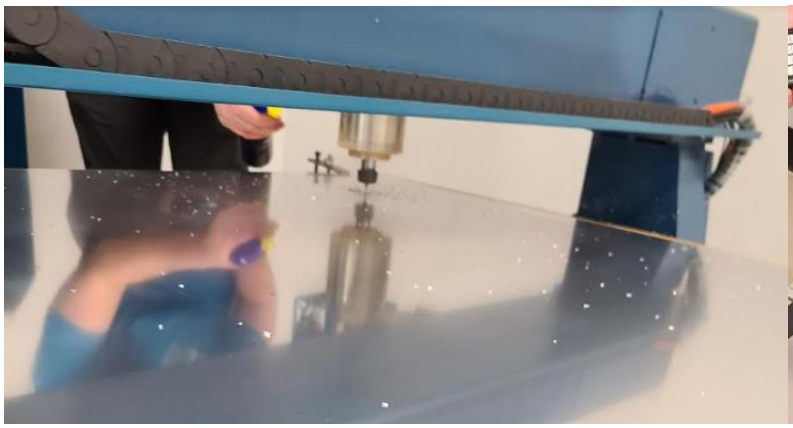
Attendance: Abby, Autumn, James, Joe, Mitchell, Ryan

What we did:

- We cut our shooter out on the CNC router
    - A mentor showed and helped us how to use the CNC router
- We made a list of things we needed to order yet
    - Bushings, shaft collars, LED Brain Box, LED Strip, Sign for pit
- We worked on getting the middle piece cut down to fit tight into the shooter so there was a seamless flow for the rings

Lessons Learned: "The type of shaft collars really makes a difference" - Abby






Saturday, January 30, 2021, 9-4 P.M.

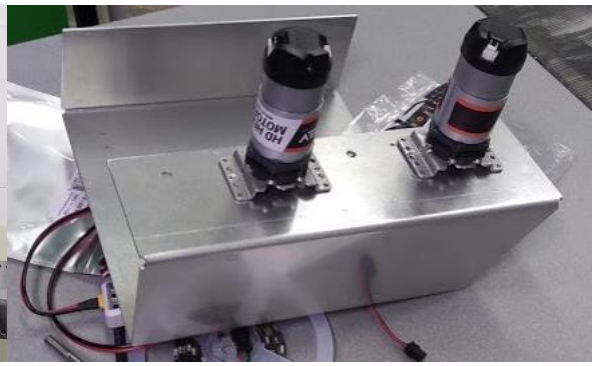
Attendance: Abby, Autumn, James, Joe, Mitchell, Ryan

What we did:

- We bent our shooter on the metal bender
    - We used 0.090 5052 aluminum
        - 5052 is tougher to machine, but is bends easily
        - 6061 is nicer to machine, cuts more cleanly, but simply breaks if you try to bend
- We attached the motors and wheels to the new and improved shooter
- We riveted the brackets on the new shooter
- We tested the new shooter
    - It shot very well, but we only made 1 every so often
    - We need to improve the accuracy and get driving practice

Lessons Learned: "The metal bender is actually called Shear Brake Roll Machine" - Joe



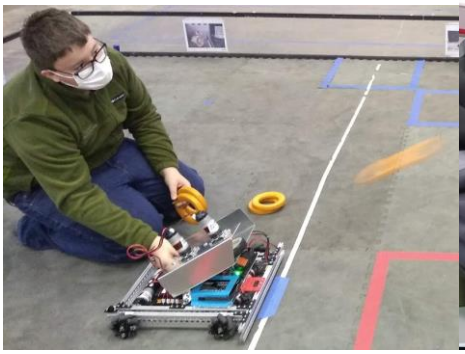
Tuesday, February 2, 2021, 6-8:30 P.M.

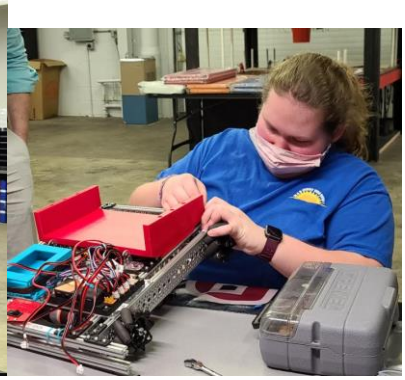
Attendance: Abby, Autumn, James, Joe, Mitchell, Ryan

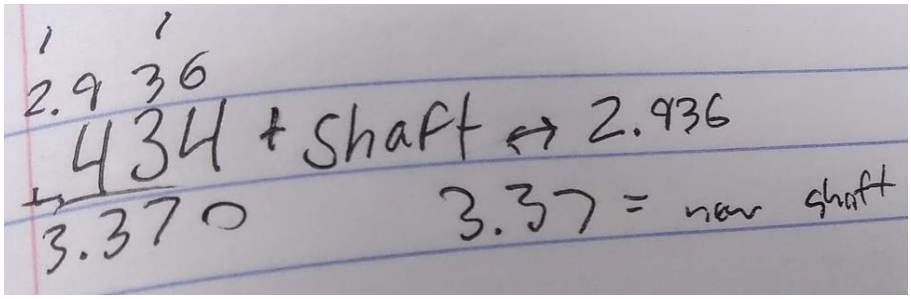
What we did:

- We CAD'd the side plates to protect the wheels
- We labeled the tool box shelves
- We continued to work on getting the red center 3D printed piece to line up with our black 3D printed intake
- We measured with a caliper on how long to make the shafts for the intake
    - We cut the shafts with a dremel

Lessons Learned: "When measuring for CADing 3D printed parts, remember to account for brackets on other parts that may need to fold up to it" - James







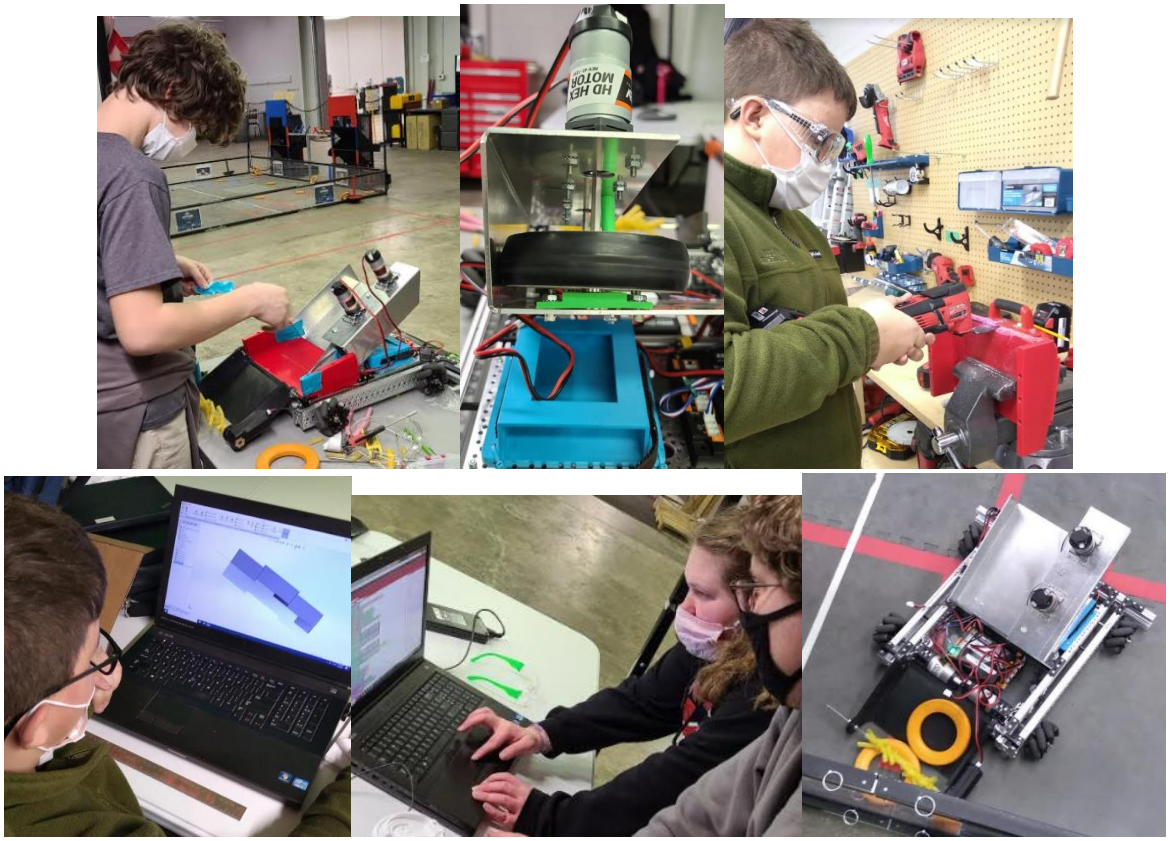
Saturday, February 6, 2021, 9-4 P.M.

Attendance: Autumn, James, Joe, Ryan

What we did:

- We bought a new caliper and a tri square
- We attached the new and improved intake to the robot
- We used a file and an Oscillating Multi-Tool to trim down the middle section
    - To big to fit in between shooter and intake
    - We attached the middle section
- We added more support for the shooter wheels with bearing brackets
- We tested the new shooter
    - Shooter shot 75 percent accurate in the top goal
- We also tested the new 3D printed intake
    - Rings got stuck on the intake
        - We had to file down and cut the surgical tubing shorter
- We started to CAD the wheel covers
- We programmed the intake
    - All components work very well together

Lessons Learned: "A vibratory saws real name is called an Oscillating Multi-Tool" - James



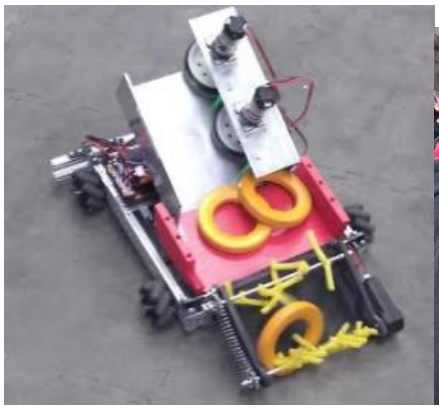
Tuesday, February 9, 2021, 6-8:30 P.M.

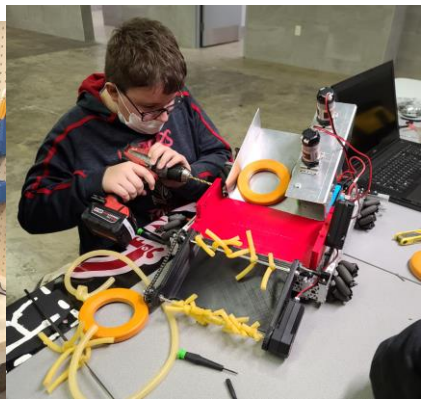
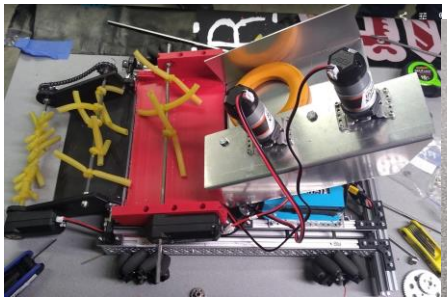
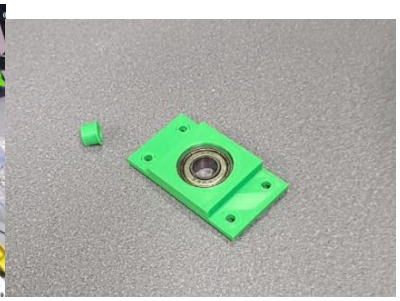
Attendance: Autumn, James, Joe, Mitchell, Ryan

What we did:

- We used a chain break to break the chain and then added a master link
- We attached the chain between the 2 shafts on the intake
- We also attached the last shaft to the middle section
    - We drilled out holes for the shafts and motor
    - We attached the core hex motor for the shaft
- Cutting the 2nd shaft to size and decide where to place it
- Learned how to cut chain links and add a master
- Working on tightening the wheels
- We worked on the engineering notebook
- In CAD we added the team name to the shooter
- We took our team picture for the school yearbook and the engineering notebook
- We measured and cut Lexan to help guide the rings to the shooter

Lessons Learned: "Pulleys are more for high speed" - Ryan



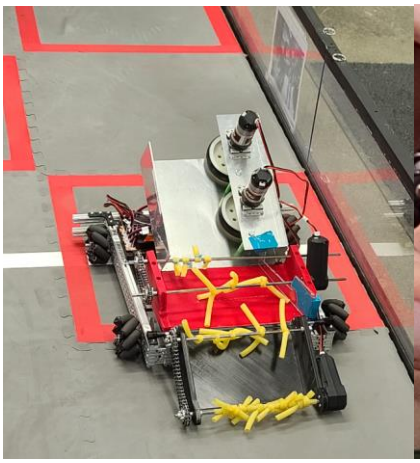
Monday, February 15, 2021, 6-8:30 P.M.

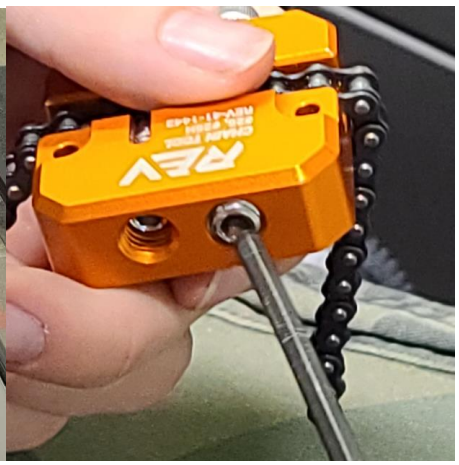
Attendance: James, Mitchell, Ryan

What we did:

- We added a 4th spindle to help rings get to shooter
- We came up with question to look up in the rules on shooting:
    - Do rings shooting out of field cause point loss
    - If we touch the shooting line does it count
- Ordered more surgical tubing - used caliper to measure the inside area ".25"
- Reminding everyone to get into STIMS so we can print that off with the rest of our stuff to upload for competition.
- We practiced shooting from different spots on the field.
    - We were getting different results depending on where we were on the field, the battery level, and power we shot at.

Lessons Learned: "Not all surgical tubing is the same. Some is much grippier than others" - Mitchell





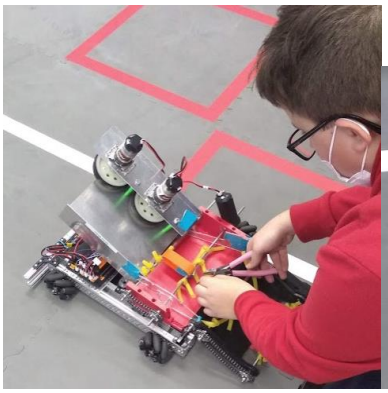
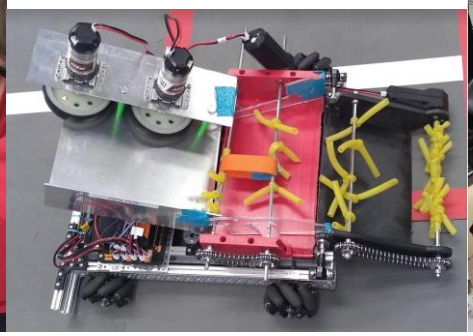
Tuesday, February 16, 2021, 6-8:30 P.M.

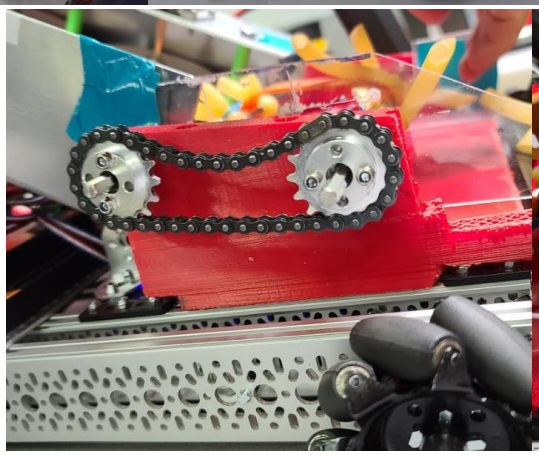
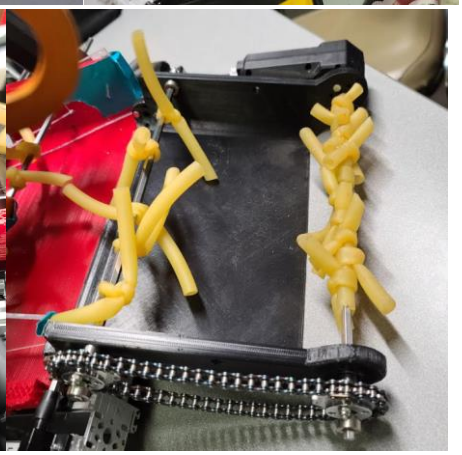
Attendance: Autumn, James, Joe, Mitchell, Ryan

What we did:

- We tested the entire robot, base, intake, middle, and shooter
    - All worked well but rings got stuck between 3rd and 4th spindle
        - Had to add orange poly band to the middle shaft to prevent getting caught
            - Worked a lot better, did not get stuck anymore
- We found the duct tape we used to hold the Lexan in place tended to grip the rings too much
    - We ended up putting painters tape over it to help smooth the transition of the rings up into the shooter from the intake

Lessons Learned: "We found out that duct tape was actually not the solution!!"
- James

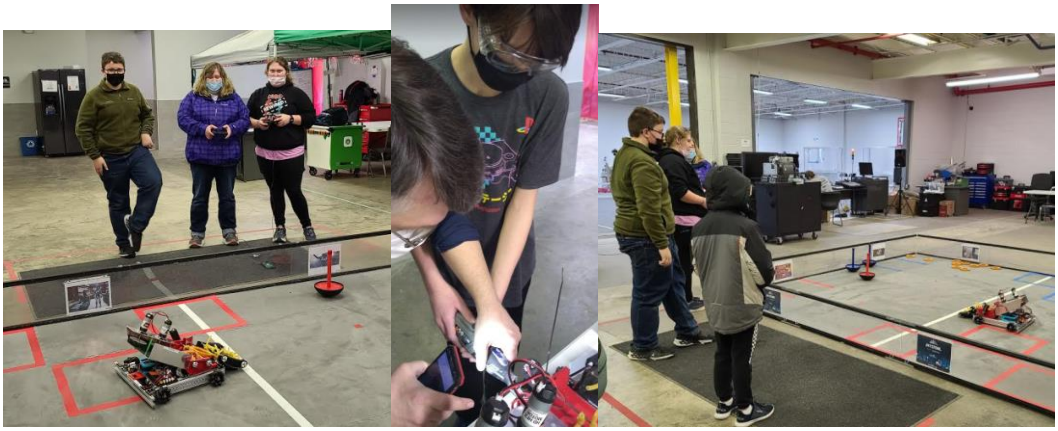
Saturday, February 20, 2021, 6-8 P.M.

Attendance: Autumn, James, Mitchell, Ryan

What we did:

- We test drove the robot to find where we would need to be to shoot accurately
    - Did not shoot very accurate
        - Used ¾ speed for the shooter and we made every single ring
- We cut down the shafts on the middle section using a dremel
- We cut Lexan using the oscillating saw
    - We added the lexan to the middle to help guide the rings into the shooter
- We adjusted the shooter angle down ¼ of an inch
- We let lego league kids drive the robot
    - We also showed the parents / let them drive
- We learned there is a sharp piece in the 90 degree angle to score things before cutting.

Lessons Learned: “More speed equals less control over rings, less speed equals accuracy and a lot of control” - Autumn



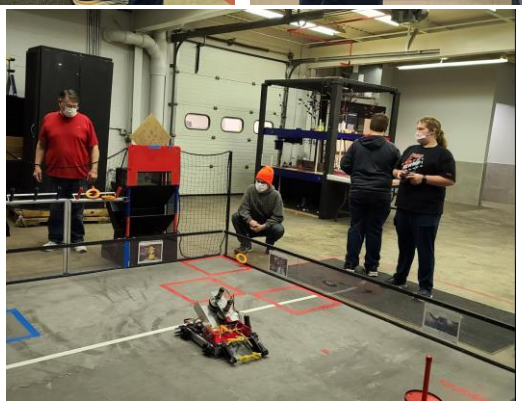
Tuesday, February 23, 2021, 6-8:30 P.M.

Attendance: Autumn, James, Joe, Mitchell, Ryan

What we did:

- We added Lexan to the bottom of our robot to shield it from rings getting lodged under our robot.
- We want to print another center section in case something breaks at competition, as it took 42 hours to print.
- Work on Autonomous and what blocks we would need for using encoders instead of timing it like last year.
    - Negative value reverse/ positive value forward.
    - Key is whatever you name it
- Need to ensure in the program we set encoder count to zero before starting.
- Fixed red centerpiece with Dremel so the black intake would fold up and sit straight up without us holding it.
- Made a list of things we need to upload to judges: 15 page portfolio, 5 min. Presentation, our note book , feedback form, and team roster.

Lessons Learned: “Encoders go for distance vs timed programming like we did last year” - Autum



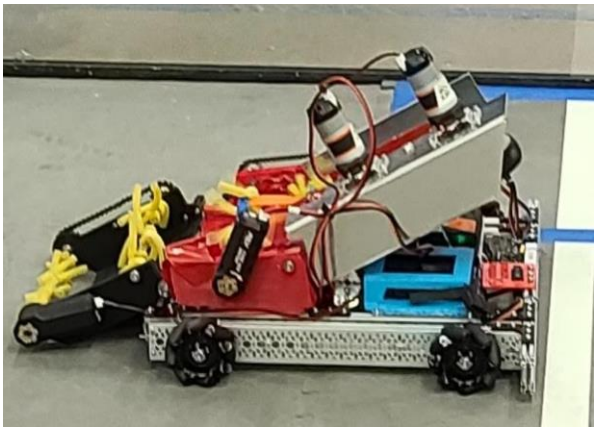
Thursday, February 25 2021, 6-8:30 P.M.

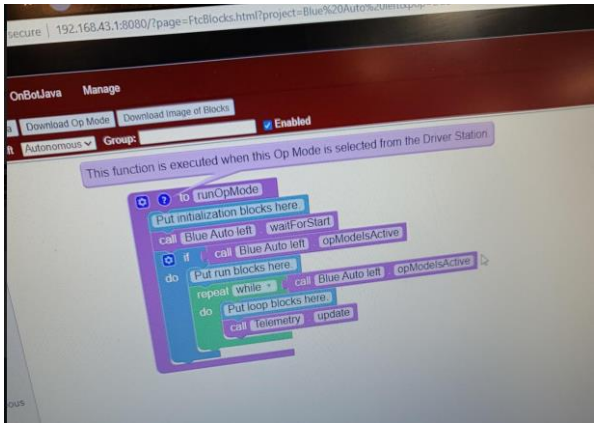
Attendance: Autumn, James, Ryan

What we did:

- We did drive practice the entire time
- CAD team did CAD during this time as well for the wedges to keep the rings coming into the shooter straight.
- Worked on Autonomous programming.
- 75mm - Mecanum wheels - 2.953 circumference
- Ticks per revolution - 28 x [4/1] x [5/1] = 560 ticks
- Wheel circumference 2.953 ‘ x 3.14 (Pi) 9.27242 “
- Measure from the center of the wheel to where you want to go. 56 ½ “ to our shooter point.

Lessons Learned: “We need to restart robot to reset encoder values to zero” - Autumn





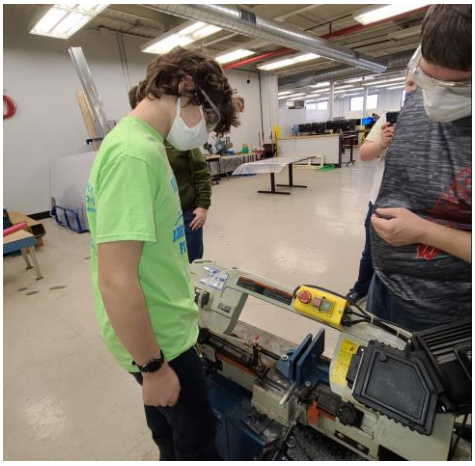
Saturday, February 27, 2021, 9-4 P.M.

Attendance: Autumn, James, Joe, Mitchell, Ryan

What we did:

- We worked on putting polycarb over our wheels and chains. We all learned to use the band saw today and did more work on the bender.
- We had to take a lot of measurements so we know where to bend to make everything fit just right.
- We spoke with Tyler Olds from First Updates now about our robot and strategy we plan on going for.
- We did a lot of driving practice today.

Lessons Learned: "It works better if you cut the Polycarb first and then pull the protective covering off" - Joe



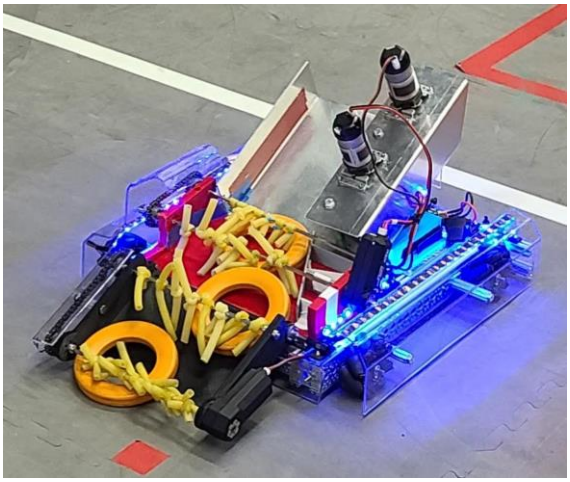
Monday, March 1, 2021, 6-8 P.M.

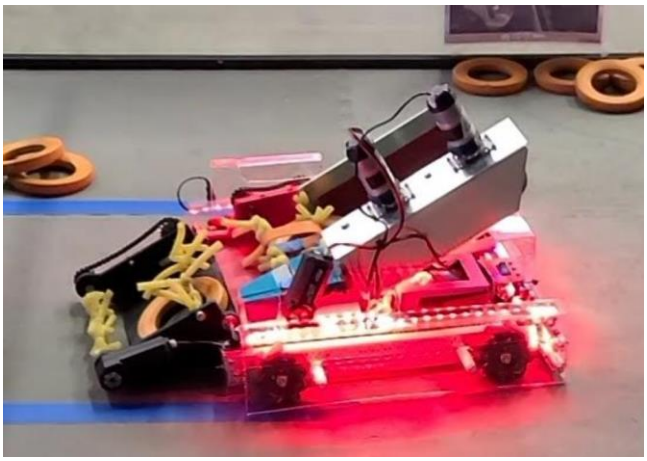
Attendance: Autumn, James, Joe, Mitchell, Ryan

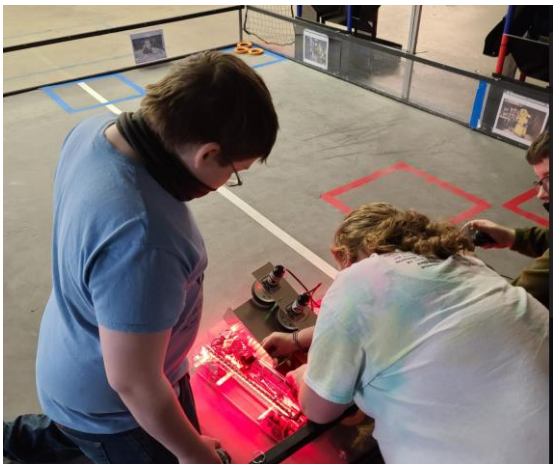
What we did:

- We finished adding supports for the bent Polycarbonate protective parts.
- We used the band saw to cut more supports.
- We added the LED's onto our robot and researched how to program the LED's S well. This has been a goal since last year.
- We continued to drive and finish up CADing the robot.
- Did a demonstration of our robot for the high school team Droid Rage's open house.

Lessons Learned: "You have to hit the mode button for 7 seconds to get it to change back." - Joe







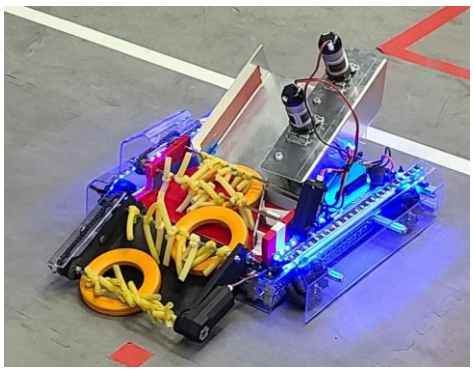
Tuesday, March 2, 2021, 6-8 P.M.

Attendance: Autumn, James, Joe, Mitchell, Ryan

What we did:

- We had one last chain that needed covering.
- Team used the band saw and cut more standoffs to support that last piece of polycarb protective coating,
- We decided to stick with the polycarb as it made our robot look more uniform than metal or 3D printing would have looked.
- Worked more on autonomous programming
    - Get rid of loop repeat as we do not need it for this.
    - We worked on just getting it to go forward.
    - Seemed to be missing a command as it would just twitch.
- Decided to call it for the day and do more searching on youtube.

Lessons Learned: “Standoffs are what you call the supports we were making to hold on the Polycarb” - Mitchell



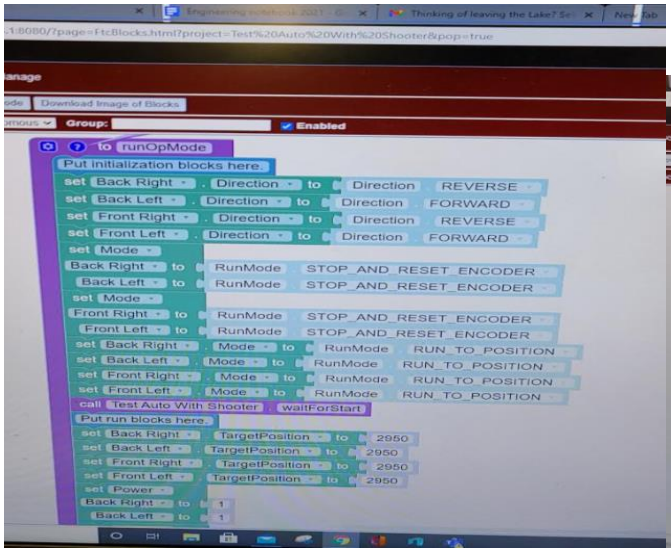
Thursday, March 4, 2021, 6-8 P.M.

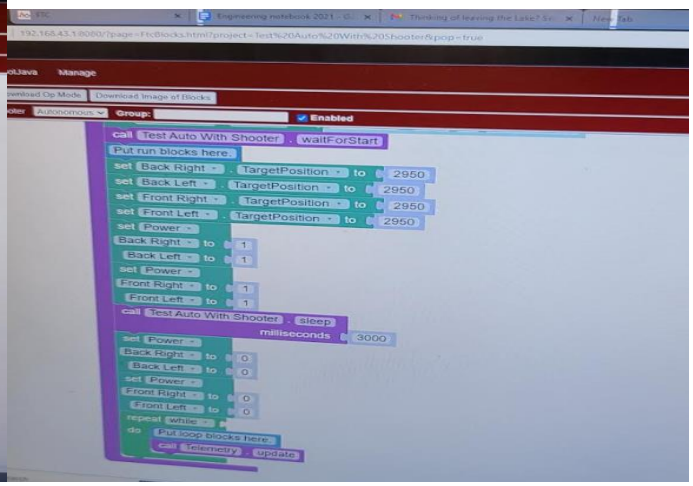
Attendance: Autumn

What we did:

- We worked for a few hours to try to understand the block programming for autonomous using encoders.
- At once point we were able to get it to drive forward but we were really struggling.
- We checked youtube and FIRST web site for more information.

Lessons Learned: "When the phone gives you an error and you correct it, and still having issues, go ahead and reboot the robot and phone. This usually fixes it. -Autumn





Saturday, March 6, 2021, 9 AM-4 P.M.

Attendance: Autumn, James, Joe, Mitchell, Ryan

What we did:

- We worked for a few hours on our presentation video for the judges.
    - It took many outtakes and practice but we finally got it!
- We made a list of things still needing to be done on the robot.
    - Glue down newly 3D printed wedges
    - Put on team numbers, possibly sponsors.
    - We were able to get everyone in STIMS finally -
    - Work on getting everything in the upload folder to upload for judges.
        - Portfolio, 5 min video presentation, STIMS team Roster, Team Feedback form, and our engineering notebook.
- We were fortunate enough, an alumni from FRC - STEMPunk was in the building and was a programmer. He was able to sit with our team for a few hours and helped us to understand autonomous more and get a good start on it.
- We decided not to use the encoders and just use time for now as it was easier while we are learning to program mecanum.

Lessons Learned: "It's important to keep the direction of the robot consistent while trying to program mecanum. Drawing it out on paper with arrows as helpful. " - Autumn

Team Business Plan

Team Plan / Goals: Our team is a two-year team consisting of 6 returning students. Valder's Middle School had enough students for a 2nd team this year, and the other team had all been on a Lego team together prior. So, there was enough growth at our school this year to have 2 middle school teams!

- Our team's goals for this season were to keep working with the design process. We wanted to come up with ideas, do some sketches and research on how we could build a robot that would meet this year's robot challenge.
- We wanted to make many prototypes and then decide which design would be best for the challenge. We wanted to then redesign the robot with the new parts we came up with and find the best version of each to use.
    - Our team Prototyped many versions of our intake as well as our shooter. This year we seemed to all agree more easily than last year on the best working prototypes.
- Our team wanted to do a lot more CADing and making 3D printed parts this year on our robot.
    - We did end up 3D Printing The middle section, intake, wedges, power switch, as well as the plate to hold our shaft in place for the shooter.
- Our team learned to discuss strategy, what would earn us the most points, as well as what might help us meet those goals on our robot.
- Our team decided to go with mecanum wheels this year, as it would work with the challenge, and we had wanted to do this since last year.
- Our team has made a list of things, COVID depending, of things we would like to do as off-season things.
    - We would like to make a Small Bot for FIRST Lego League Jr students to drive with bumpers, etc.
    - We would also like to learn more about block programming, more on CAD as well.

Marketing:

- Our team received our funds from the Lakeshore FIRST Robotics Program We kept a running total to make sure we stayed in budget.
- Our team put in a lot of time on our Engineering notebook this year to make sure we noted everything including sketches, CAD, programming screens etc.
- We updated our Facebook page throughout the season.
- We made sure everyone got into STIMS for the competition

- Our team kept continually communicating with the parents about the upcoming meeting times and schedules as that was fluid with COVID.
- We put out T-shirt order forms, collected monies and got them turned in.
- Our team worked on getting a new banner for our pit and redesigning our pit but decided to put this off until the off season when we would have more quality time to spend on this.

Outreach and Sustainability:

- With COVID-19 this year, it was hard to do a lot of outreach, but we were able to show a few FIRST Lego League Teams as well as FIRST Lego League Jr. our robot and let them drive it. We were able to show them where they could go and what their next level would be.
- By helping build excitement in the program, we gain more students, teams, and mentors that are willing to follow their students through the program as well. This will ensure we keep continued growth in all the programs.
- Our team helped present FTC mock competition for the Lakeshore Robotics Program annual Advisory Council for our sponsors and educational partners.

- In normal, Non-Covid years, our outreach events we normally helped with would have been the Manitowoc County Fair booth, Library STEM days, parades, FLL Practice Regional in Valders, FLL Regional at Lakeshore Technical College in Cleveland, as well as helping to mentor FLL Jr teams throughout the year.

Funding: The Lakeshore FIRST Robotics Program is a county wide program located in Manitowoc County in Wisconsin. It is a 501(C)(3) non-profit that encompasses 23 FIRST Lego League Jr teams, 18 FLL Teams, 6 FTC teams, and 5 FRC teams. Funding for the Lakeshore FIRST Robotics Program is done through Sponsor presentations by Mentors and high school students, as well as grants, and working with foundations who assist our program.

- We use FIRST Tech Challenge students more for outreach to help us gain visibility in the community, more teams, more mentors and for sustainability by showing the younger students the next levels of the program.
- The students also help the younger programs by being junior mentors, and help the Lego students with programming, learning core values, as well as gracious professionalism etc.

Thank you to all our sponsors who make this all possible!

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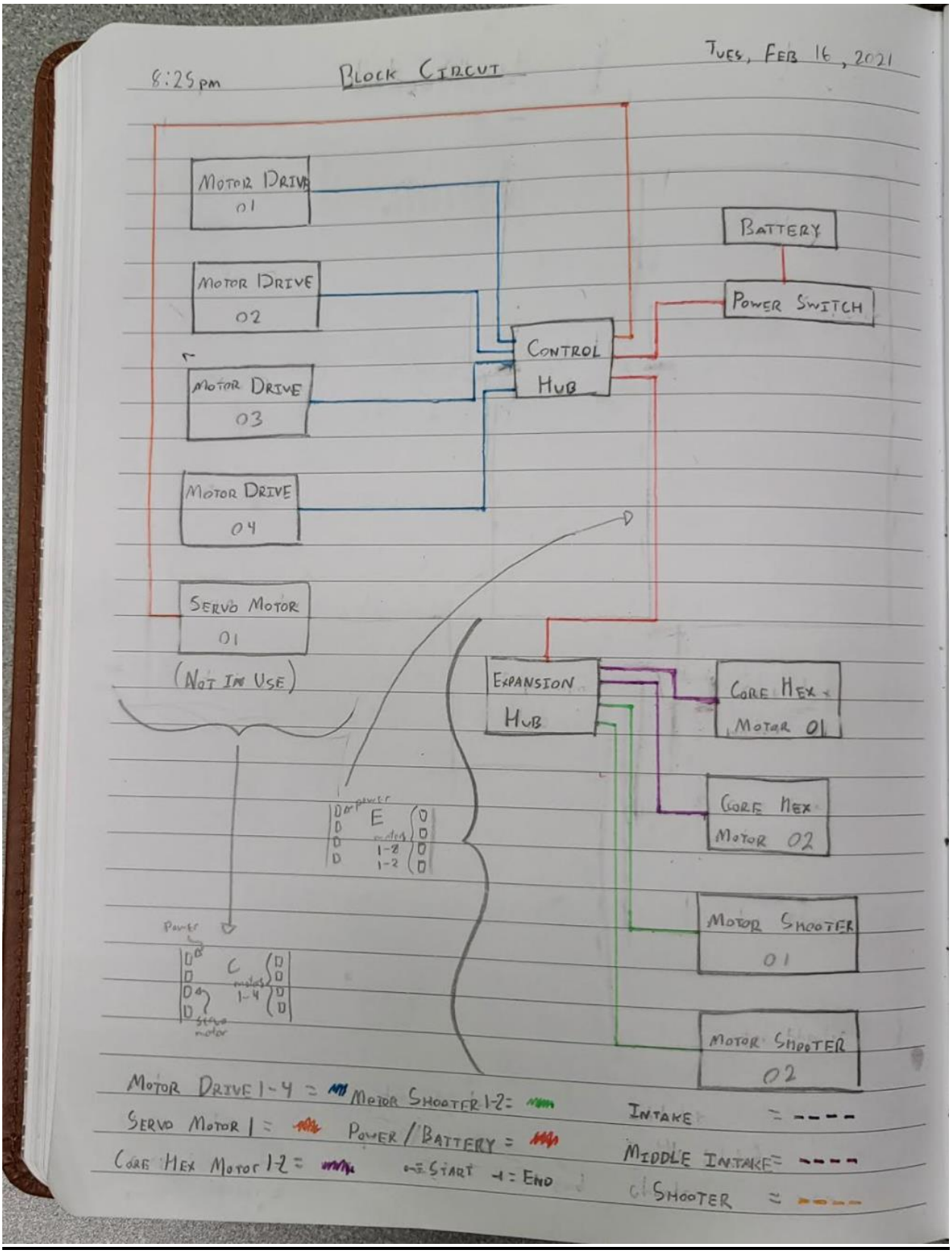
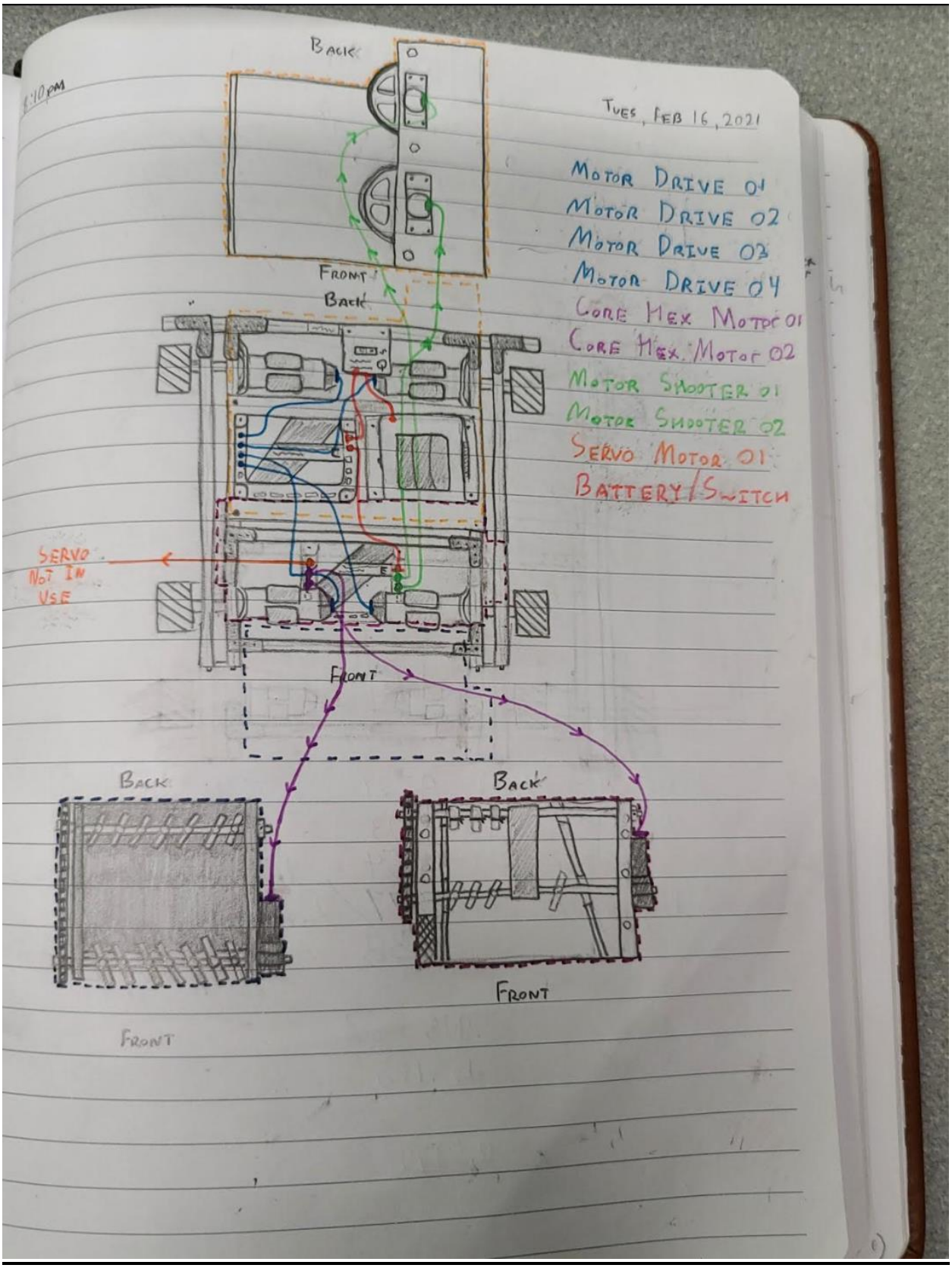

8:25 PM
BLOCK CIRCUT
TUES, FEB 16, 2021
MOTOR DRIVE 01
MOTOR DRIVE 02
MOTOR DRIVE 03
MOTOR DRIVE 04
BATTERY
POWER SWITCH
CONTROL HUB
SERVO MOTOR 01
(NOT IN USE)
EXPANSION HUB
CORE HEX MOTOR 01
CORE HEX MOTOR 02
MOTOR SHOOTER 01
MOTOR SHOOTER 02
Power
C
motors 1-4
servo motor
E
motors 1-2
MOTOR DRIVE 1-4 =
MOTOR SHOOTER 1-2 =
INTAKE =
SERVO MOTOR 1 =
POWER / BATTERY =
MIDDLE INTAKE =
CORE HEX MOTOR 1-2 =
- = START + = END
SHOOTER =


Back
Front
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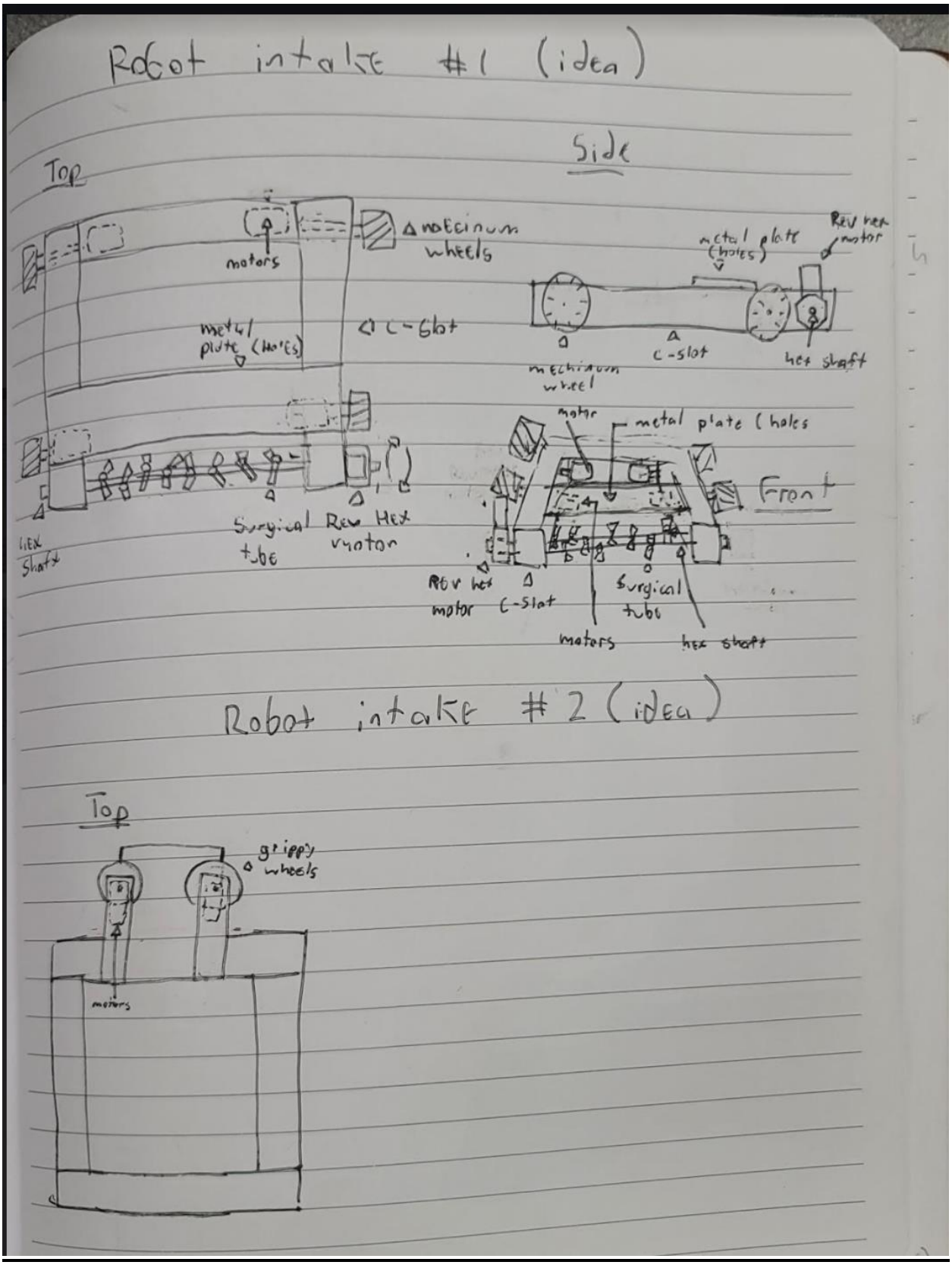
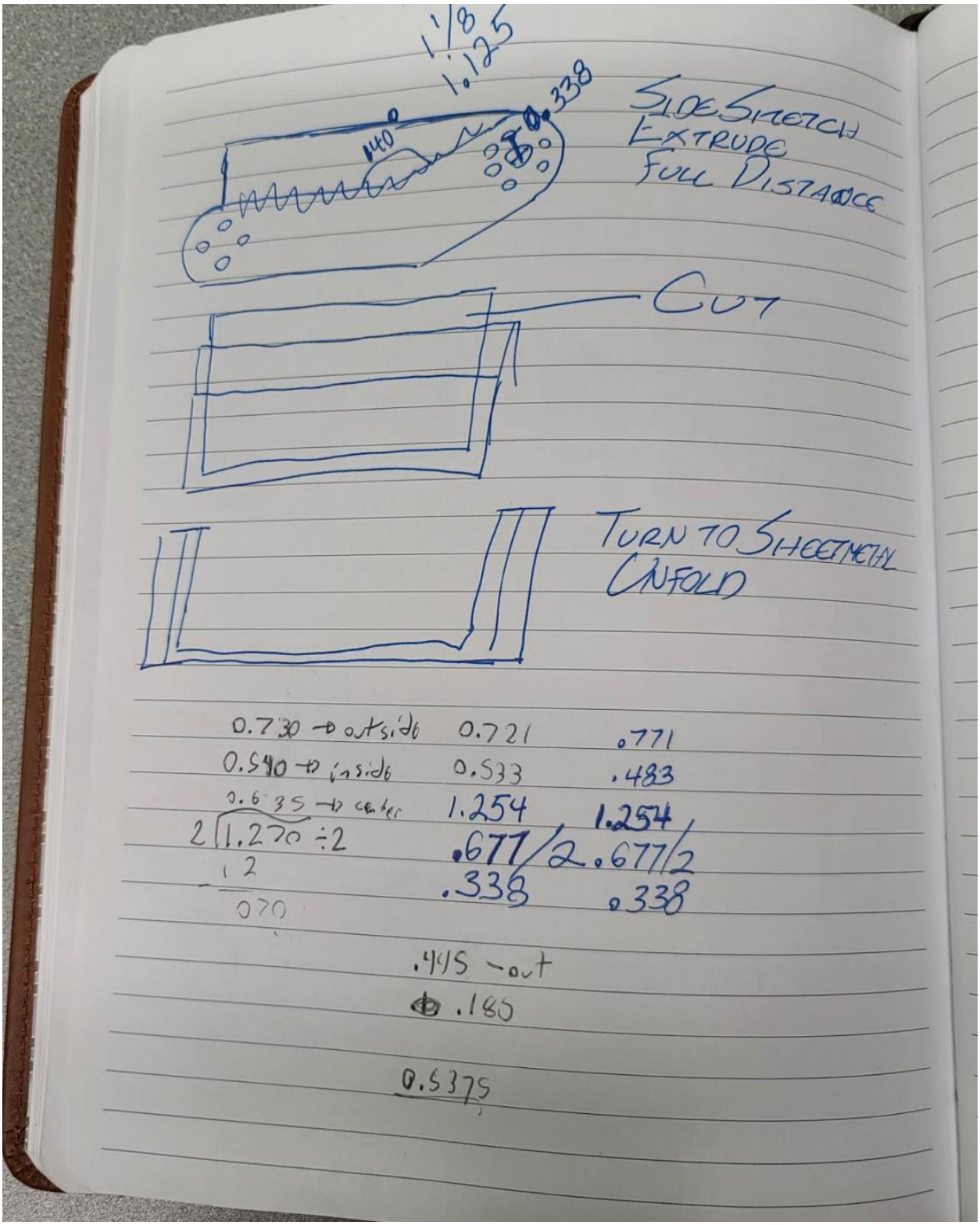
Back
Back
Front
Front
Tues, Feb 16, 2021
Motor Drive 01
Motor Drive 02
Motor Drive 03
Motor Drive 04
Core Hex Motor 01
Core Hex Motor 02
Motor Shooter 01
Motor Shooter 02
Servo Motor 01
Battery/Switch
Servo Not In Use


Robot intake #1 (idea)
Top
Side
motors
Δ mecanum wheels
metal plate (holes)
C-Slot
Hex Shaft
Surgical tube
Rev Hex motor
mecanum wheel
metal plate (holes)
Rev hex motor
C-slot
hex shaft
motor
metal plate (holes
Front
Rev hex motor
C-Slot
Surgical tube
motors
hex shaft
Robot intake #2 (idea)
Top
grippy wheels
motors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SLOE SKETCH
EXTRUDE
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CUT
TURN TO SHEETMETAL
UNFOLD
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0.540 → inside
0.635 → center
2 1.270 ÷ 2
12
070
0.721
0.533
1.254
.677/2
.338
.771
.483
1.254
.677/2
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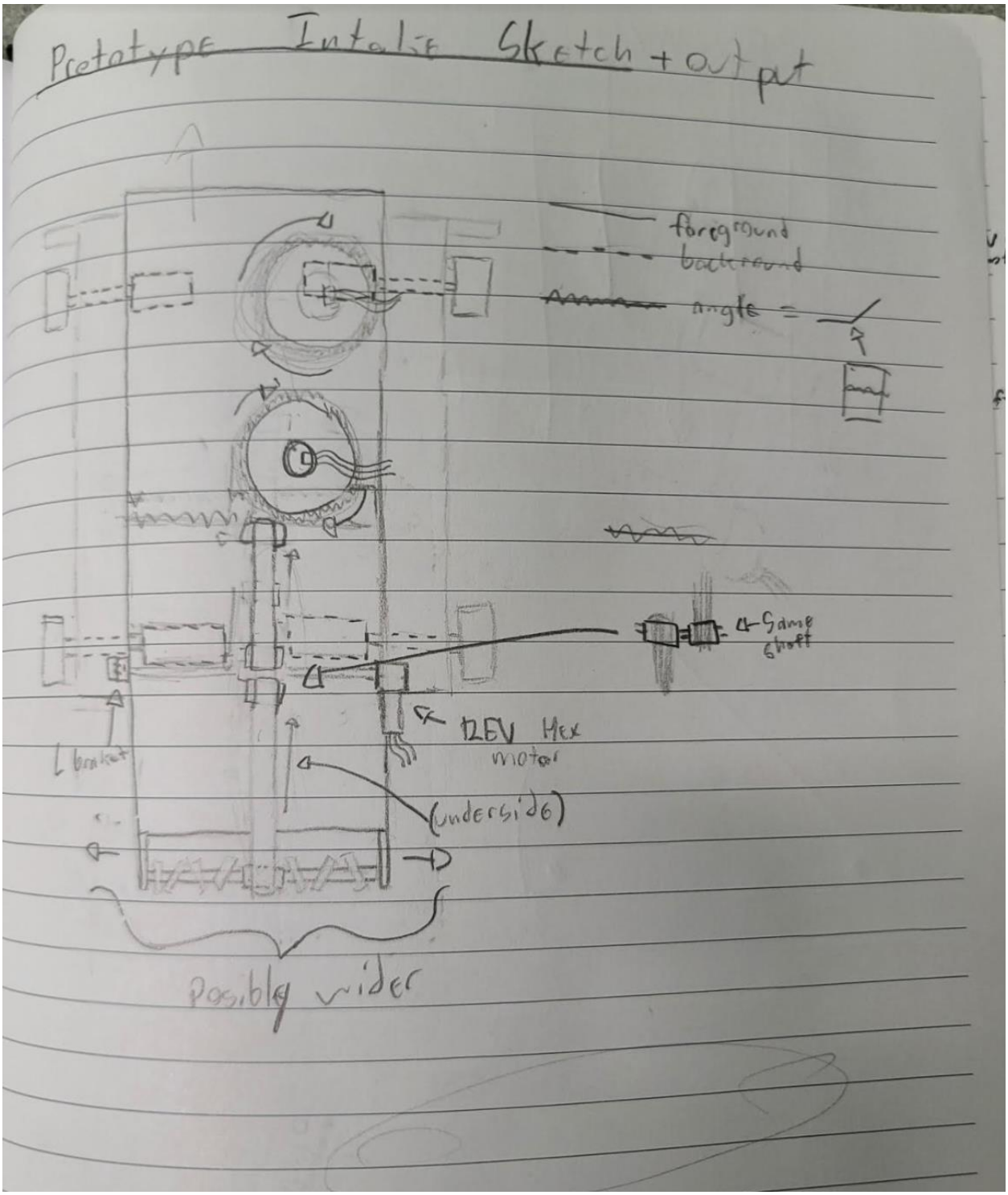
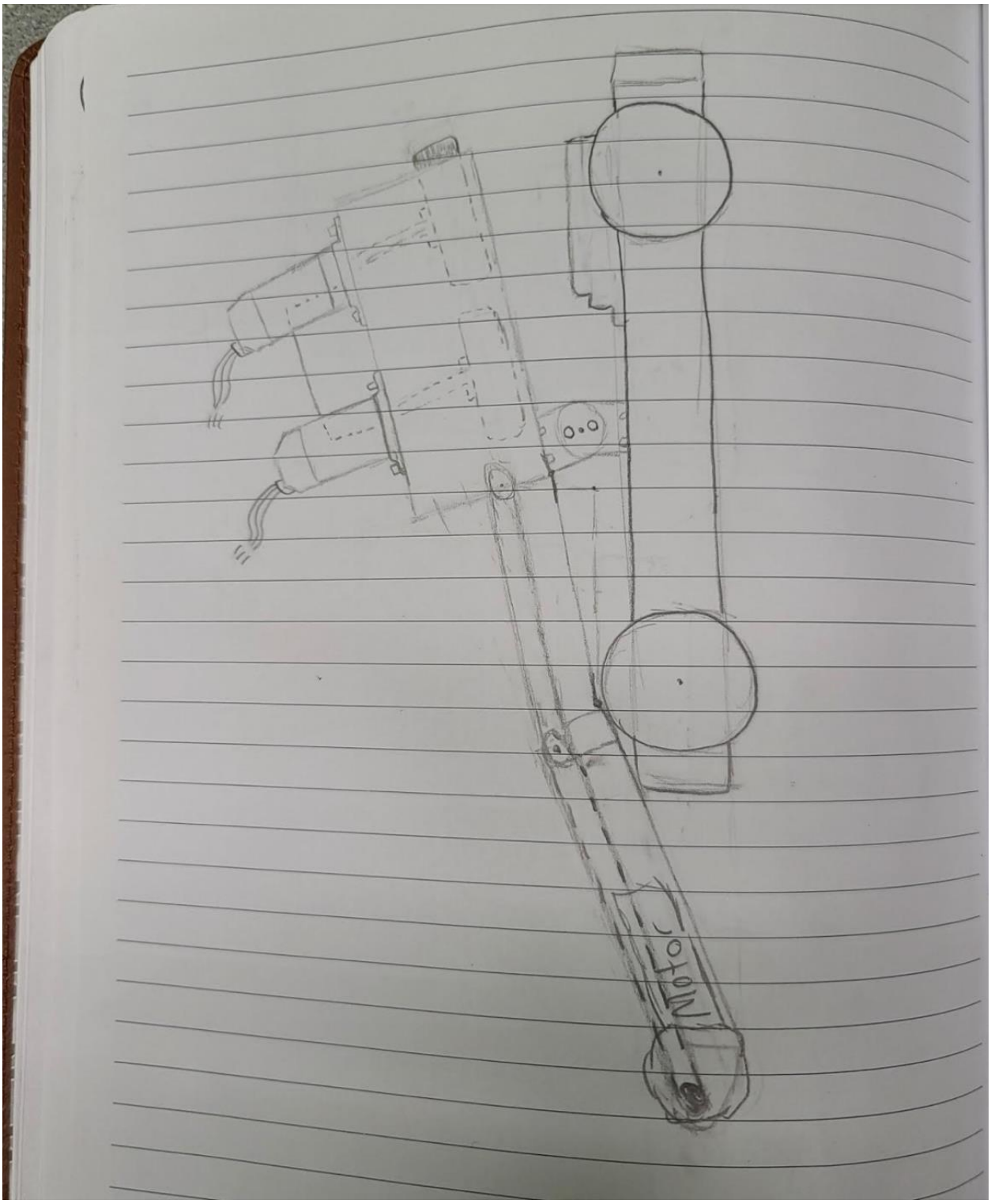
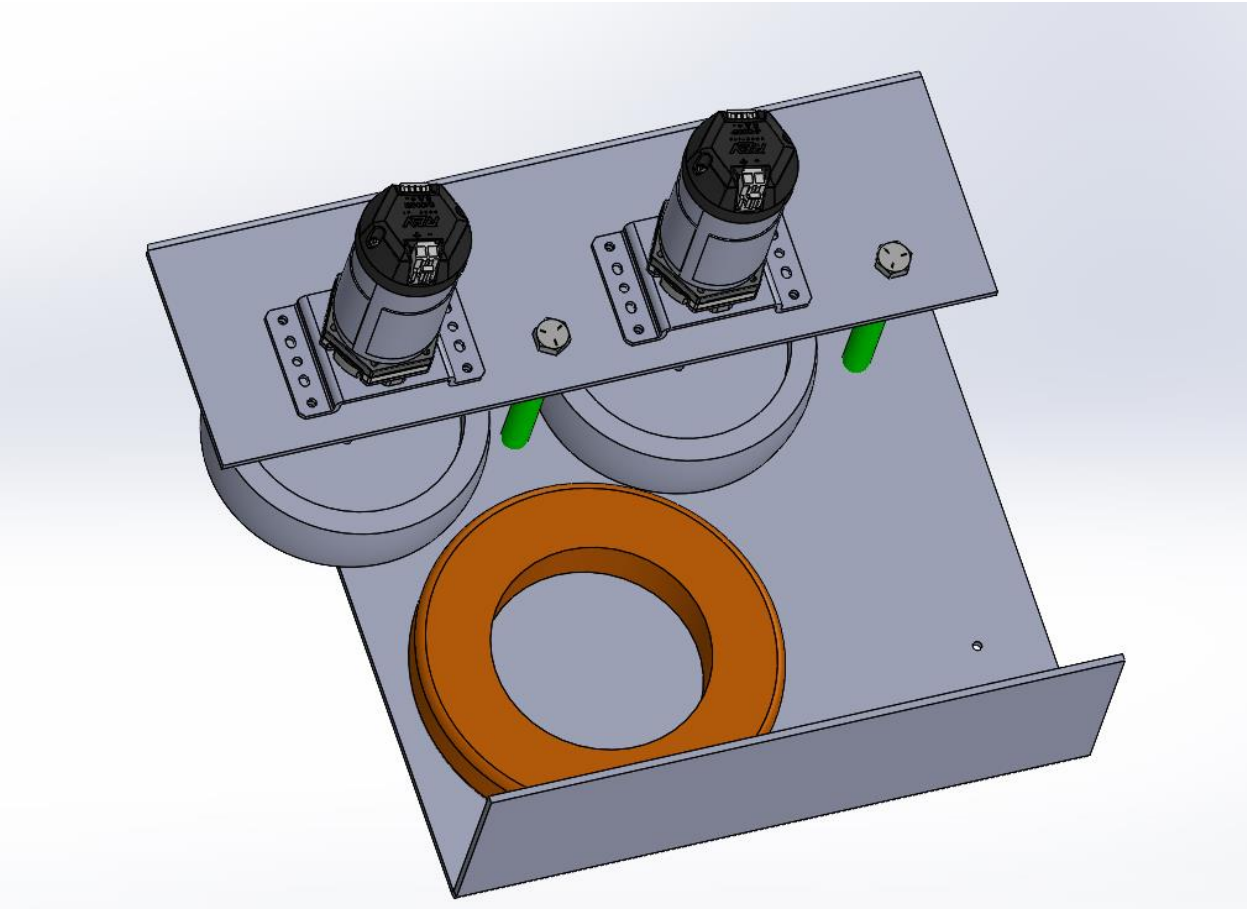
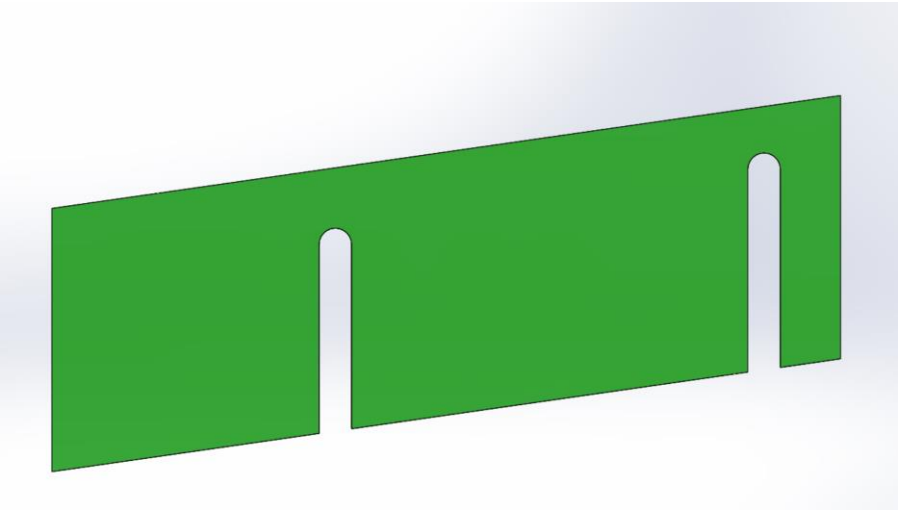
.445 - out
.180
0.5375

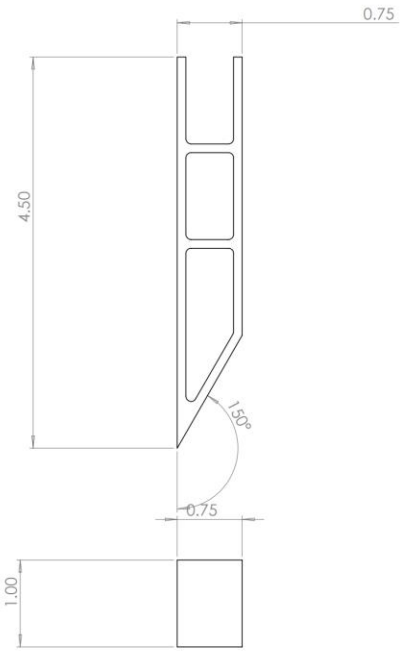

Prototype Intake Sketch + output
foreground
background
angle =
Same shaft
REV Hex motor
L bracket
(underside)
Possibly wider

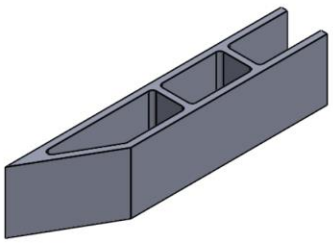

Motor

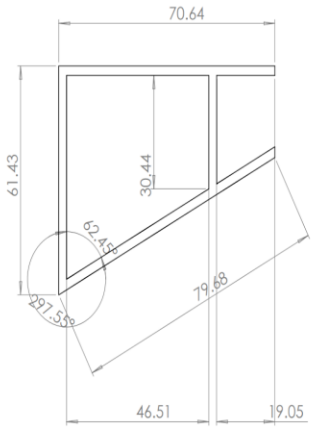
CAD

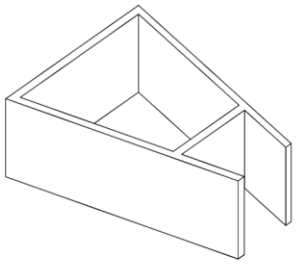


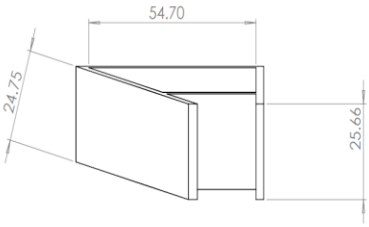












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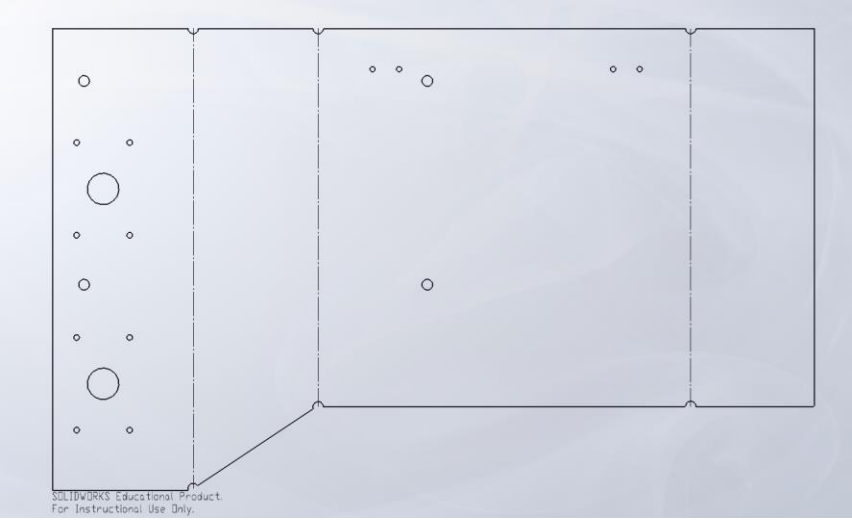
			ENG APPR.		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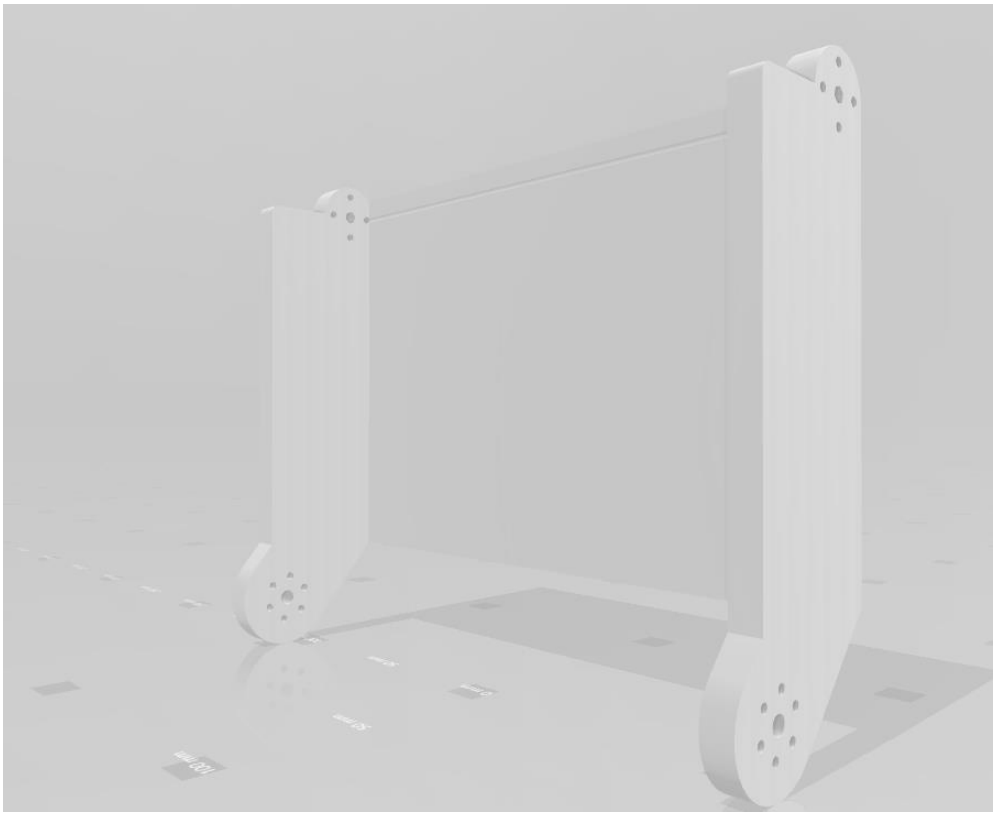

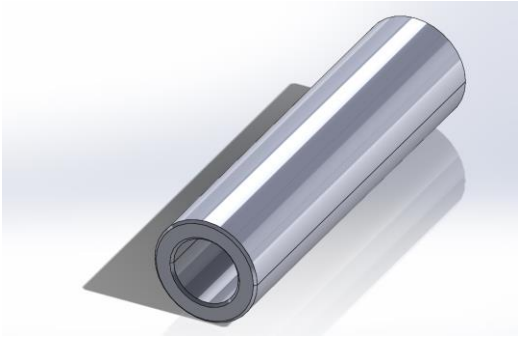

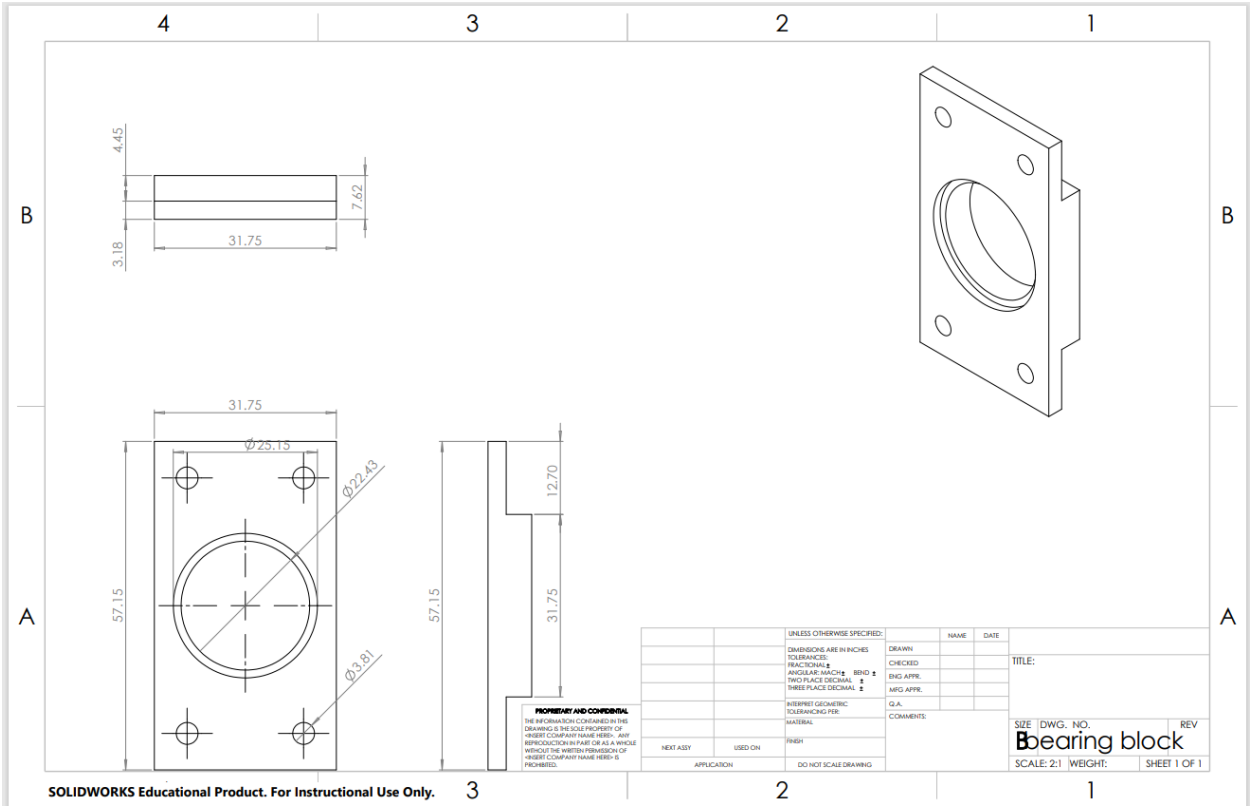
4
3
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MATERIAL
FINISH
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USED ON
APPLICATION
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ENG APPR.
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COMMENTS:
TITLE:
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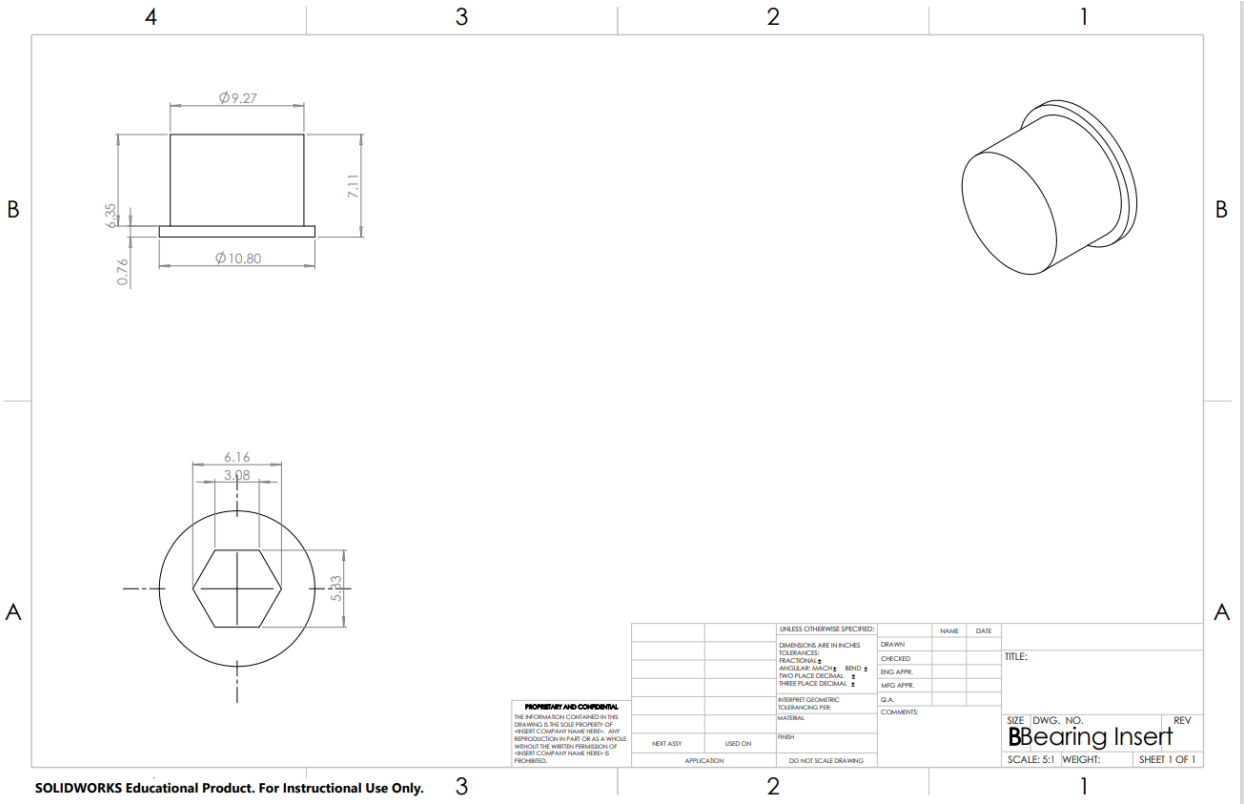
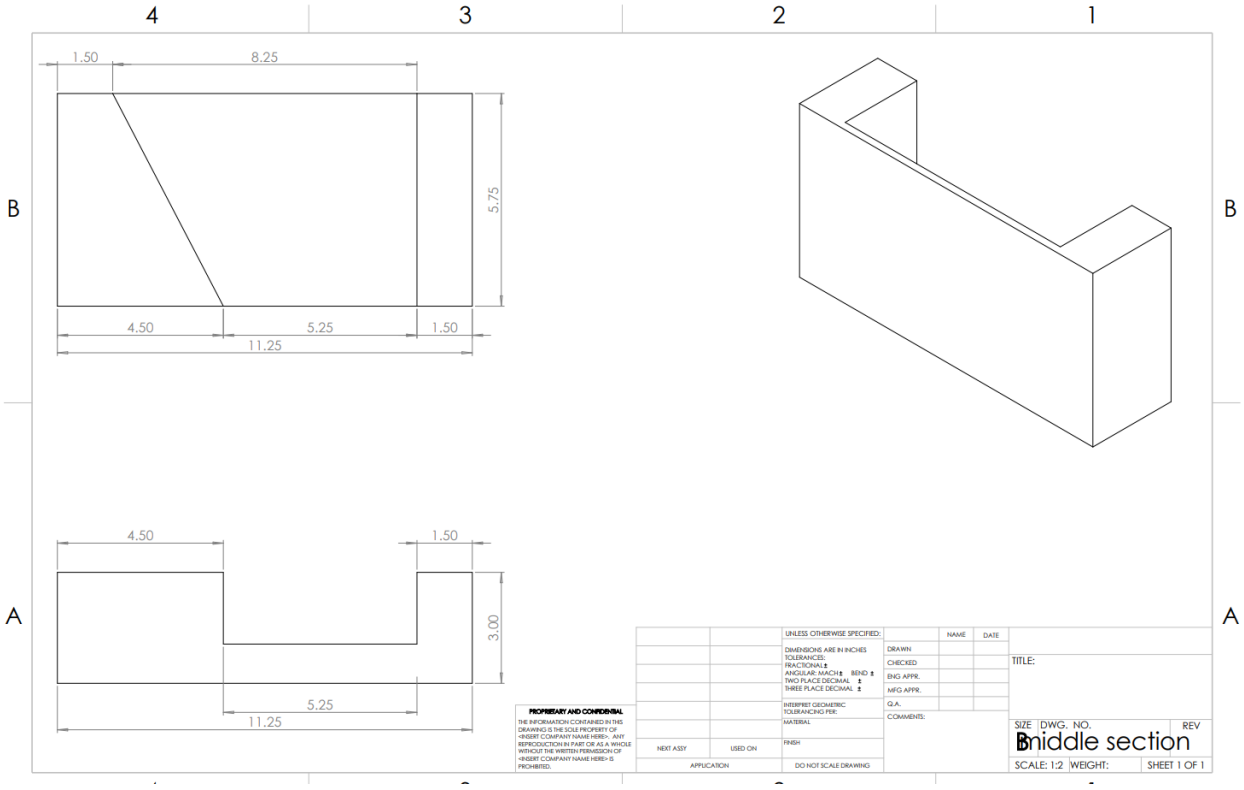
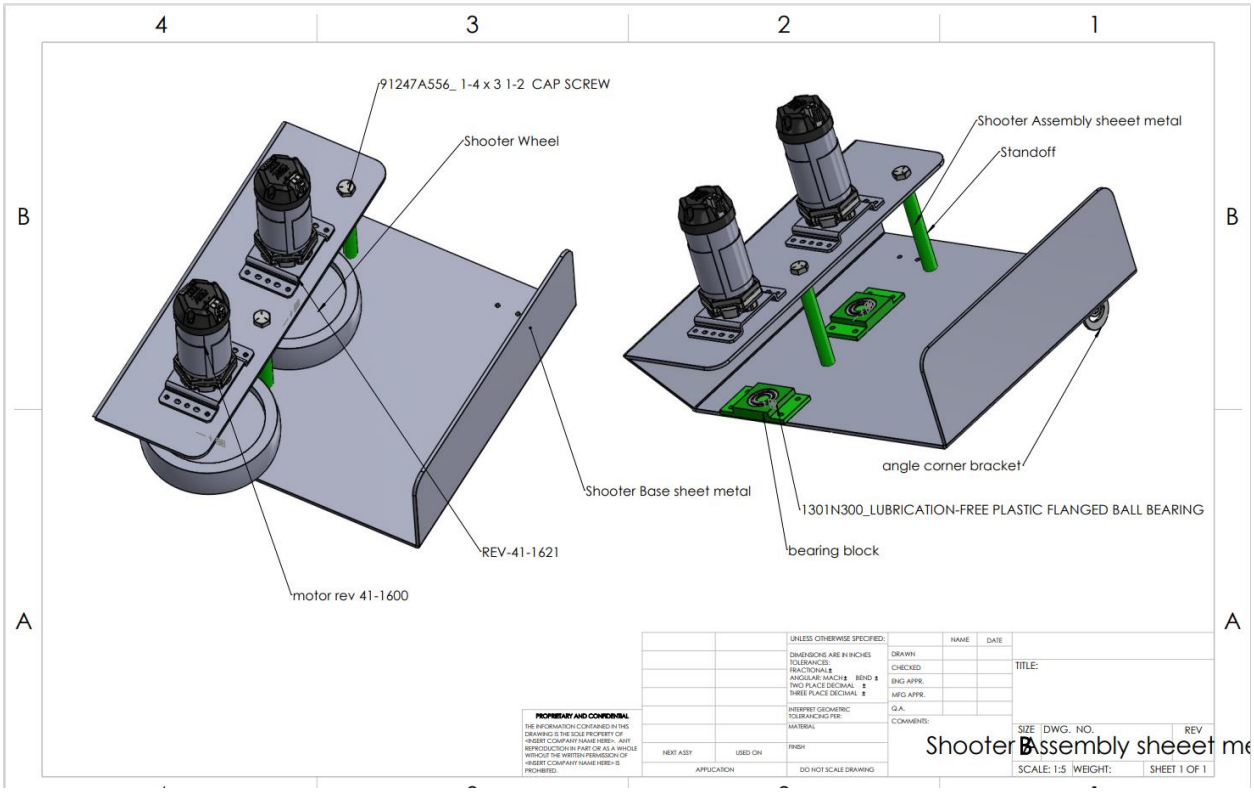
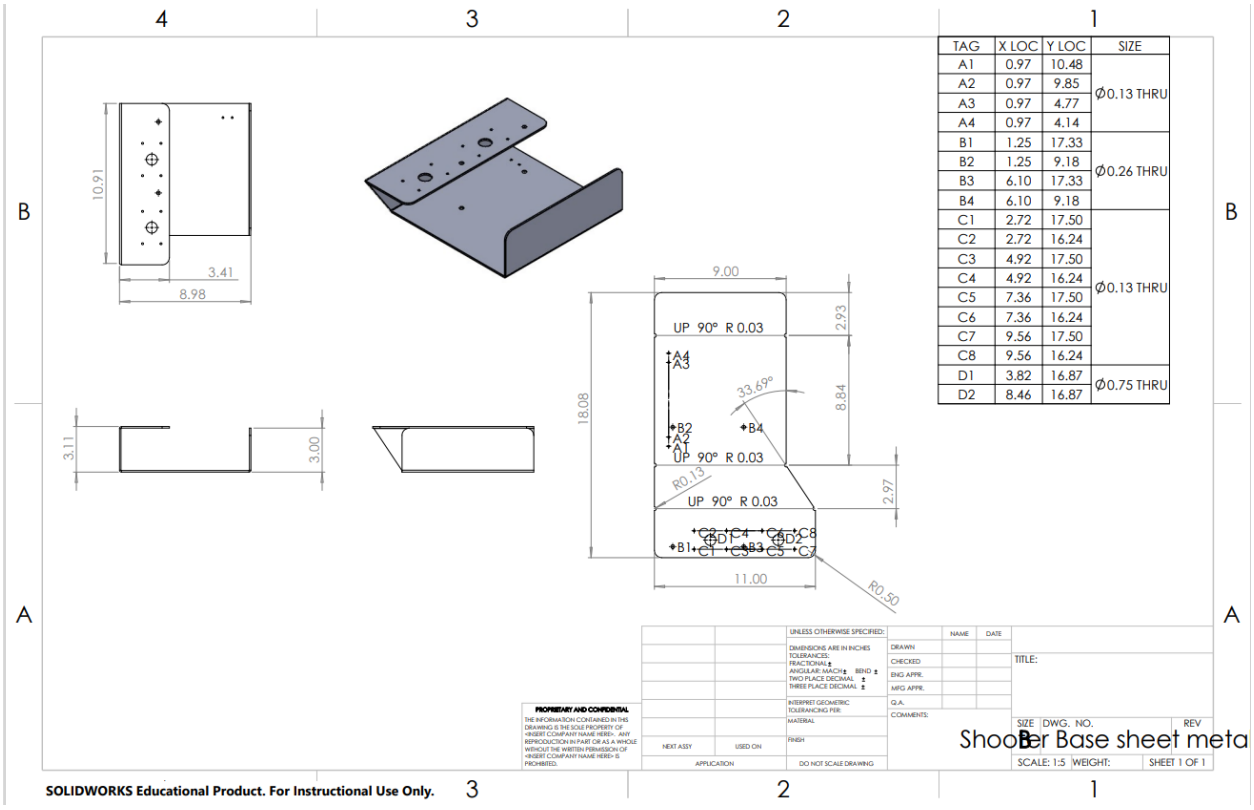
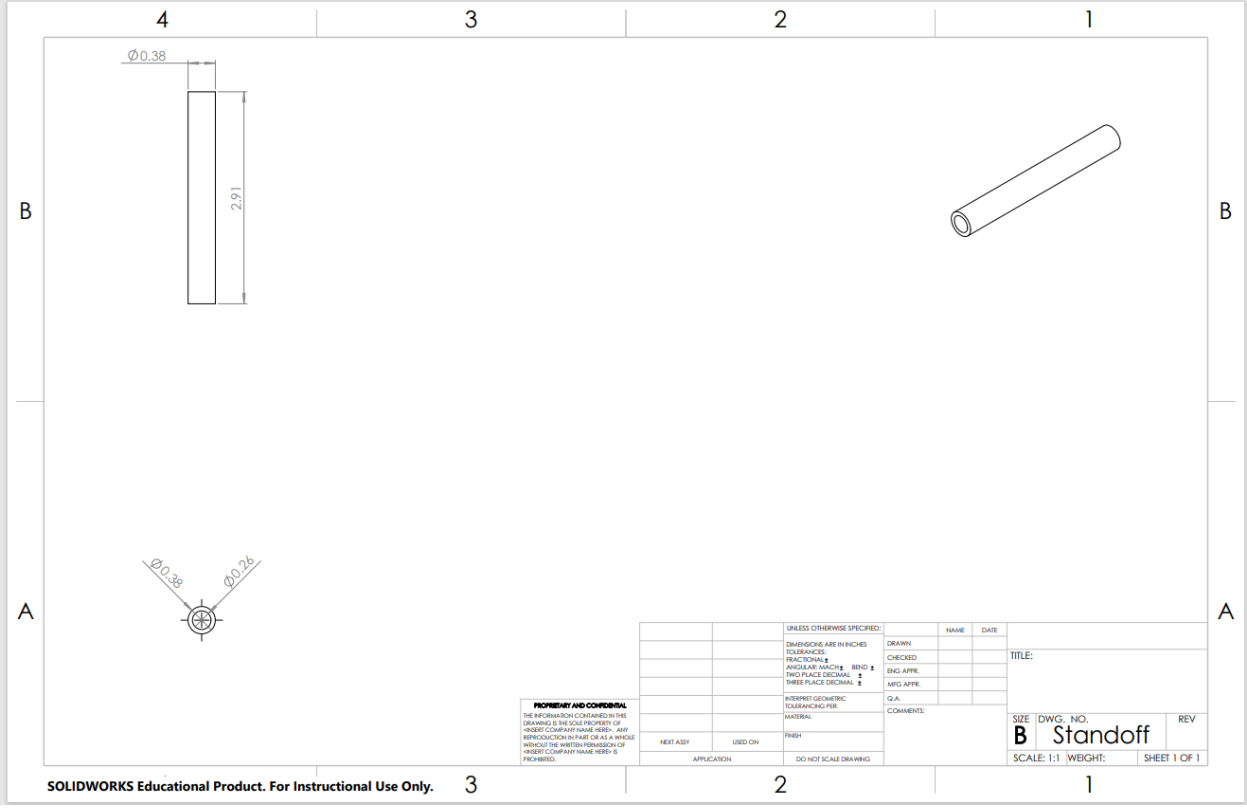

Ø9.27
7.11
6.35
0.76
Ø10.80
6.16
3.08
5.33
SOLIDWORKS Educational Product. For Instructional Use Only.
BBearing Insert
SCALE: 5:1
WEIGHT:
SHEET 1 OF 1


1.50
8.25
5.75
4.50
5.25
1.50
11.25
4.50
1.50
3.00
5.25
11.25
Bmiddle section
SCALE: 1:2
WEIGHT:
SHEET 1 OF 1





TAG	X LOC	Y LOC	SIZE
A1	0.97	10.48	Ø0.13 THRU
A2	0.97	9.85	
A3	0.97	4.77	
A4	0.97	4.14	
B1	1.25	17.33	Ø0.26 THRU
B2	1.25	9.18	
B3	6.10	17.33	
B4	6.10	9.18	
C1	2.72	17.50	Ø0.13 THRU
C2	2.72	16.24	
C3	4.92	17.50	
C4	4.92	16.24	
C5	7.36	17.50	
C6	7.36	16.24	
C7	9.56	17.50	
C8	9.56	16.24	
D1	3.82	16.87	Ø0.75 THRU
D2	8.46	16.87	


4
3
2
1
B
A
Ø0.38
2.91
Ø0.38
Ø0.26
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UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL
FINISH
NEXT ASSY
USED ON
APPLICATION
DO NOT SCALE DRAWING
NAME
DATE
DRAWN
CHECKED
ENG APPR.
MFG APPR.
Q.A.
COMMENTS:
TITLE:
SIZE
B
DWG. NO.
Standoff
REV
SCALE: 1:1
WEIGHT:
SHEET 1 OF 1
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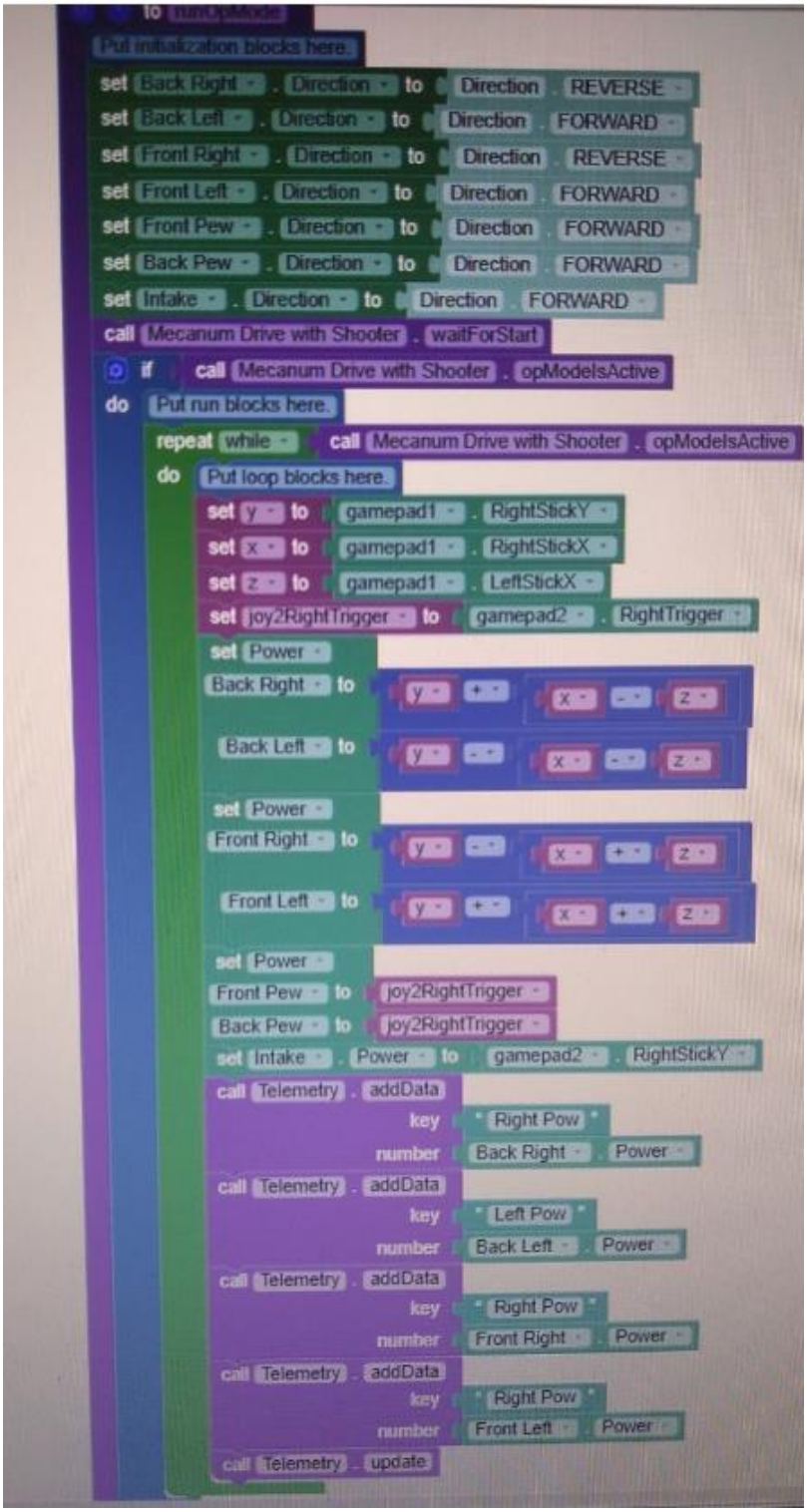
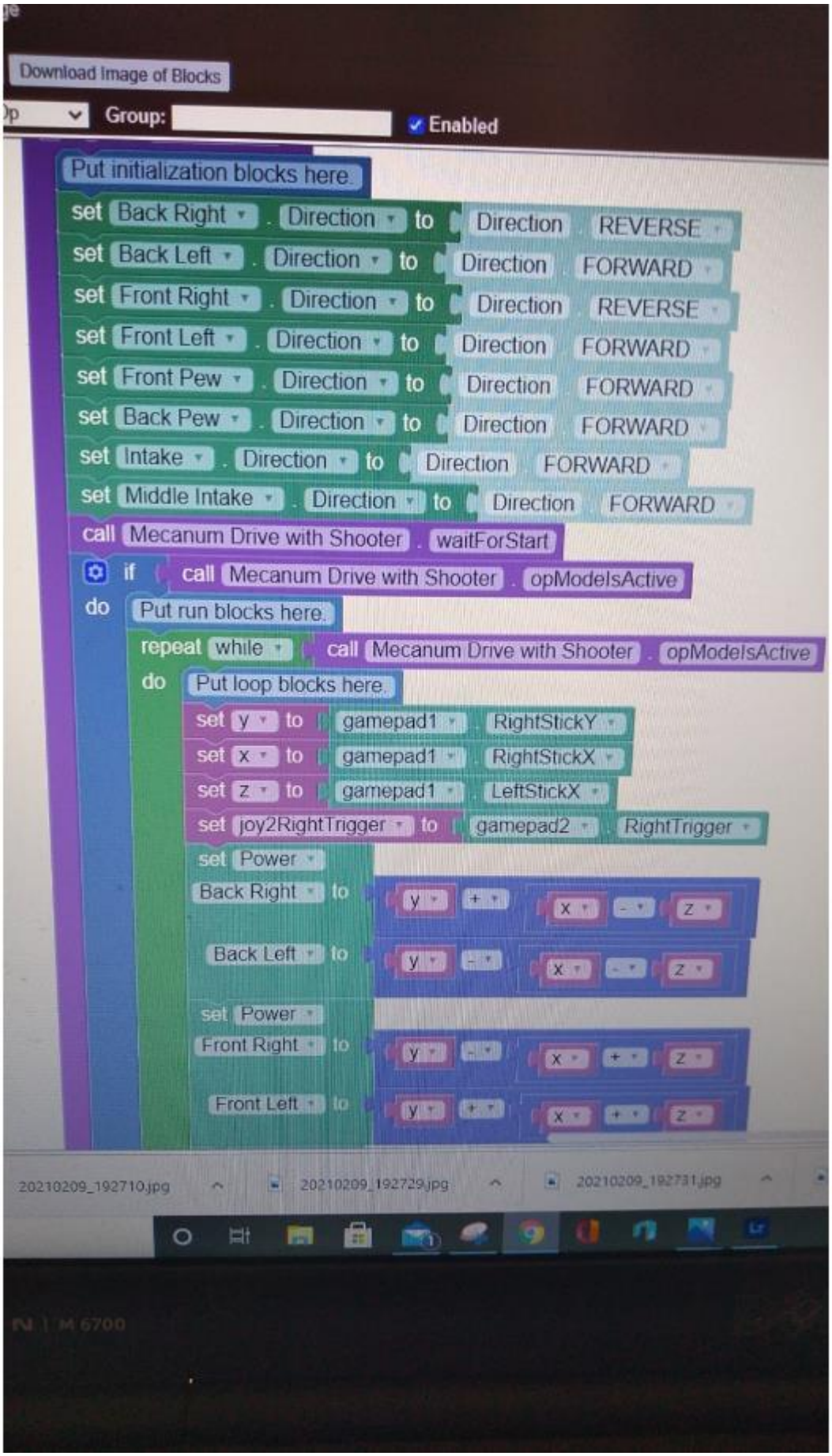
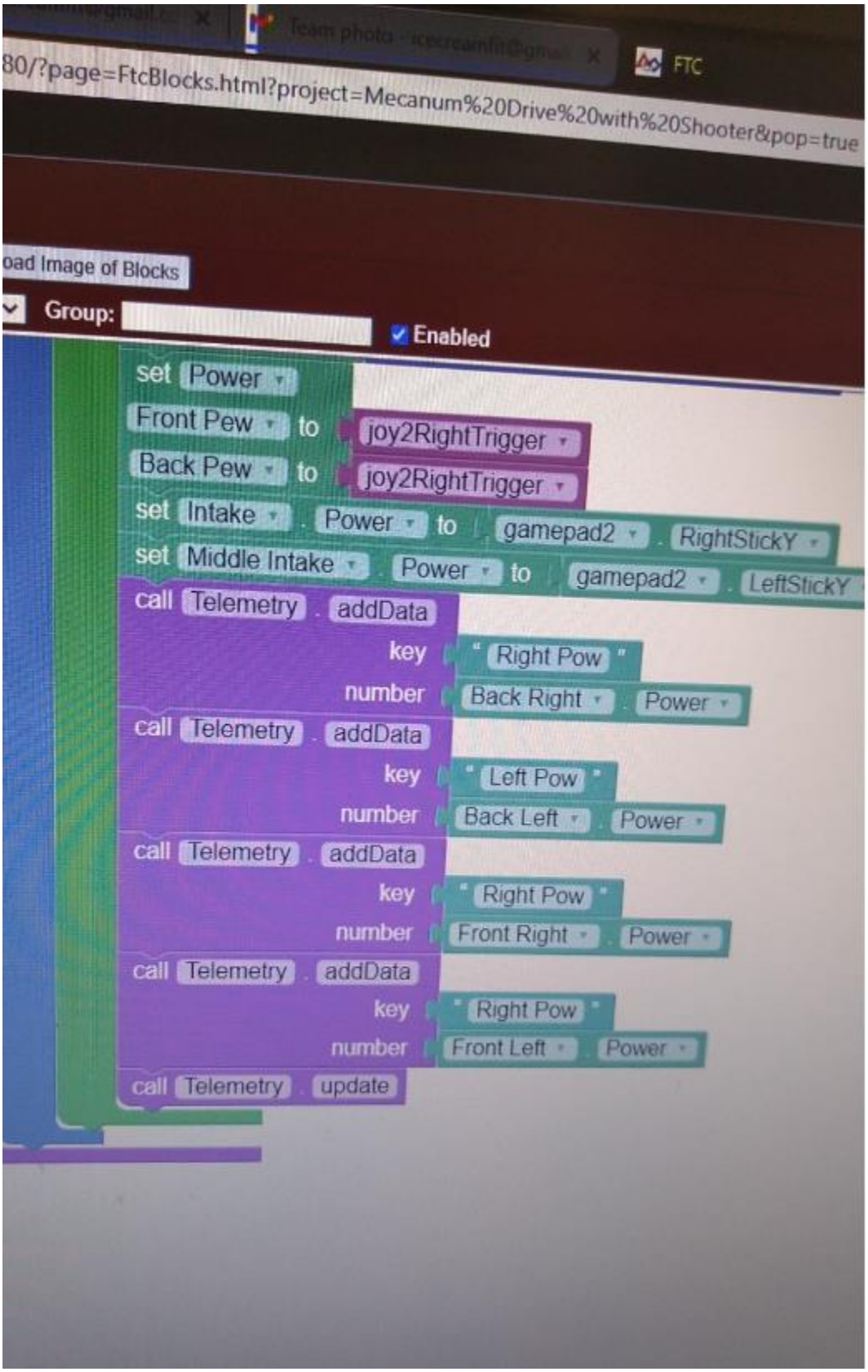
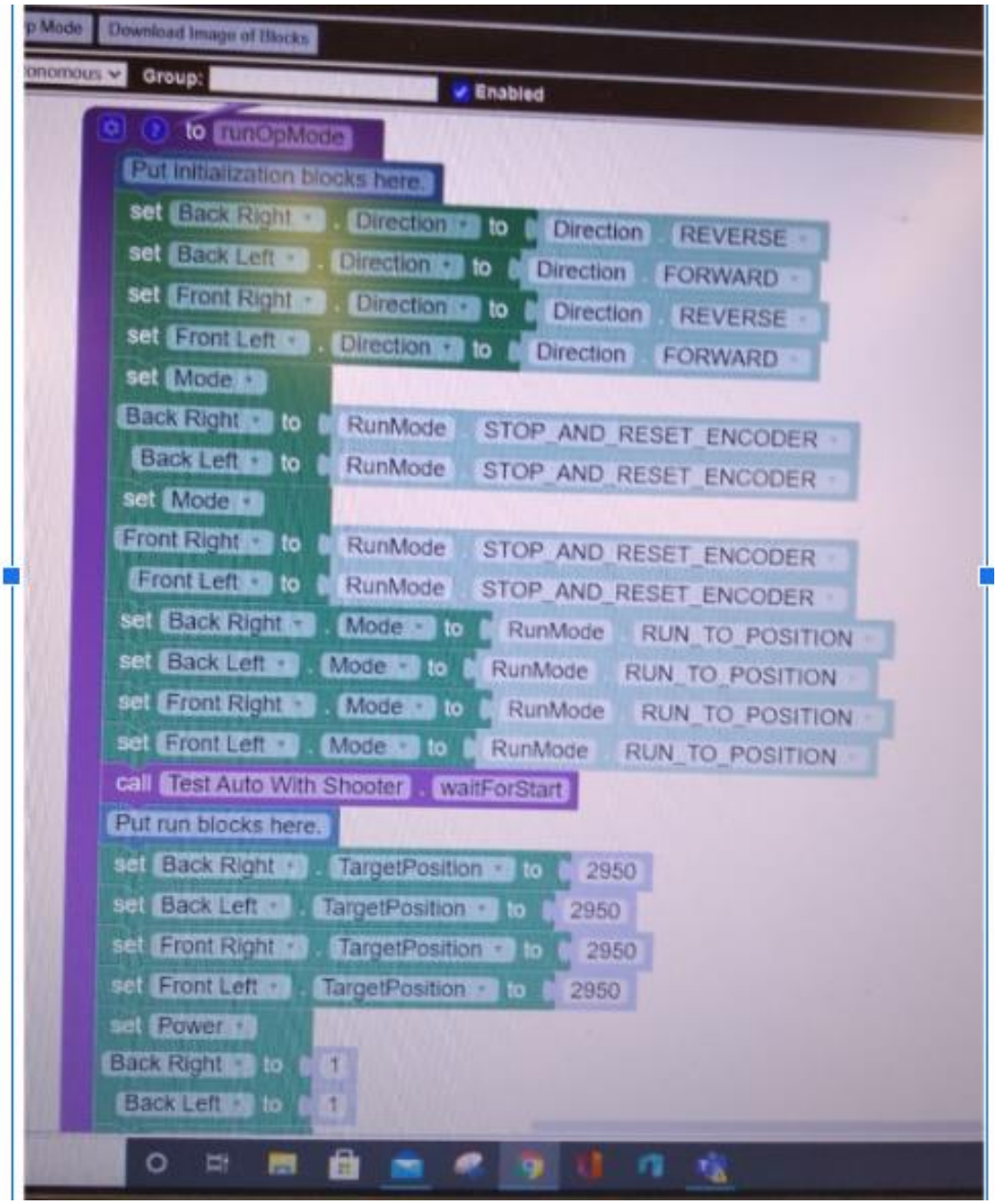
Programming

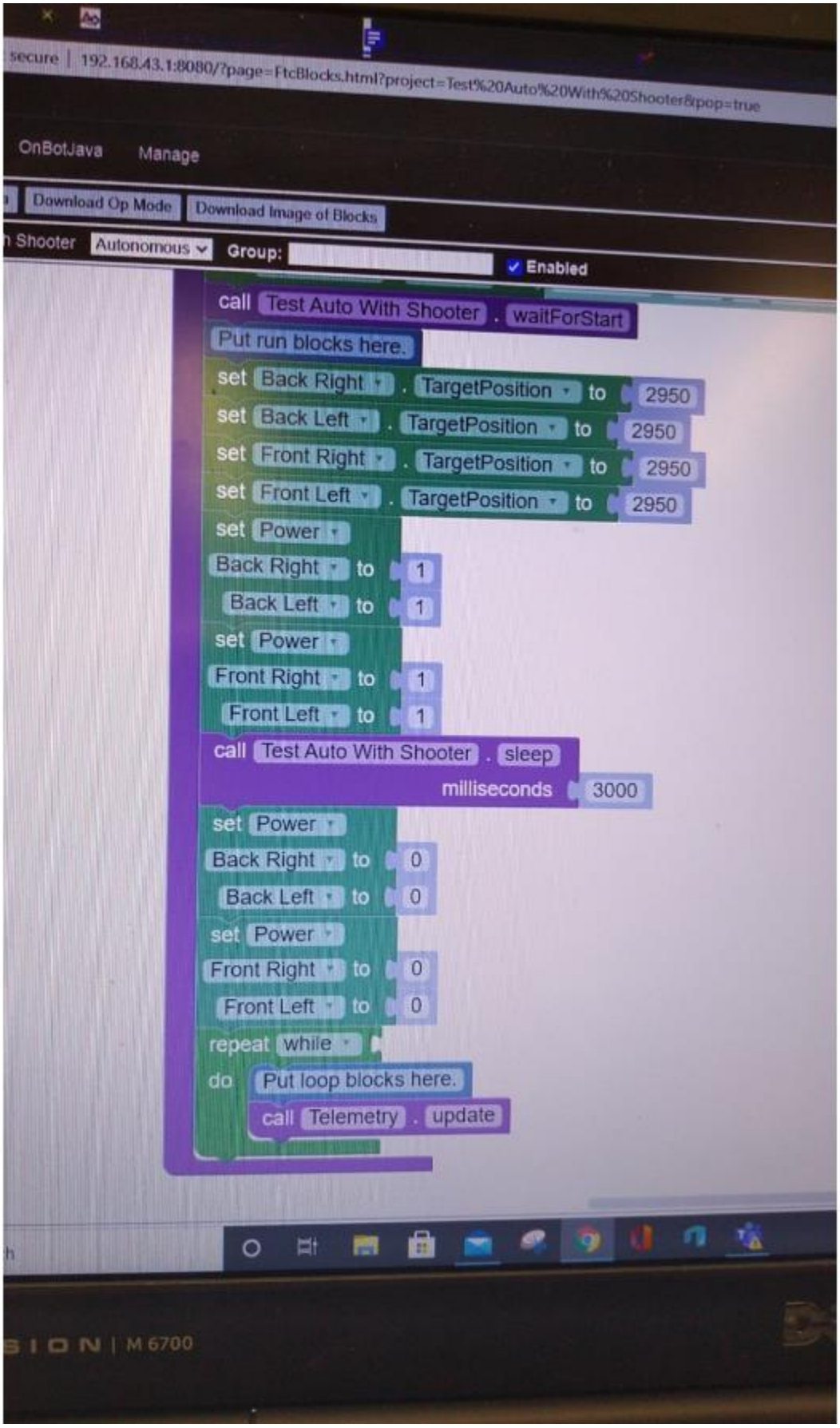
***** More programming is coming, and will have finished for competition as we were still working on autonomous codes at the time this was uploaded.**

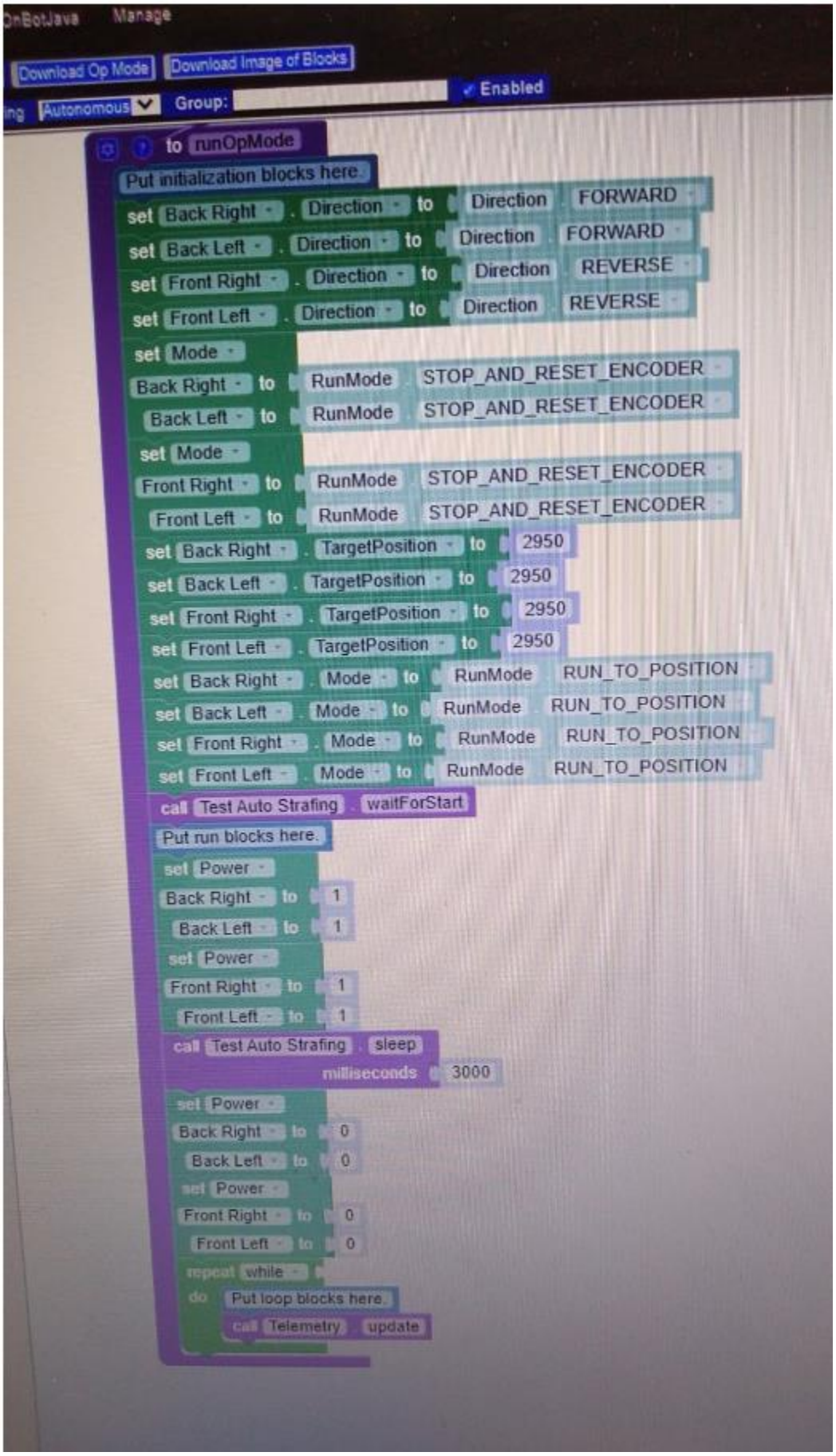


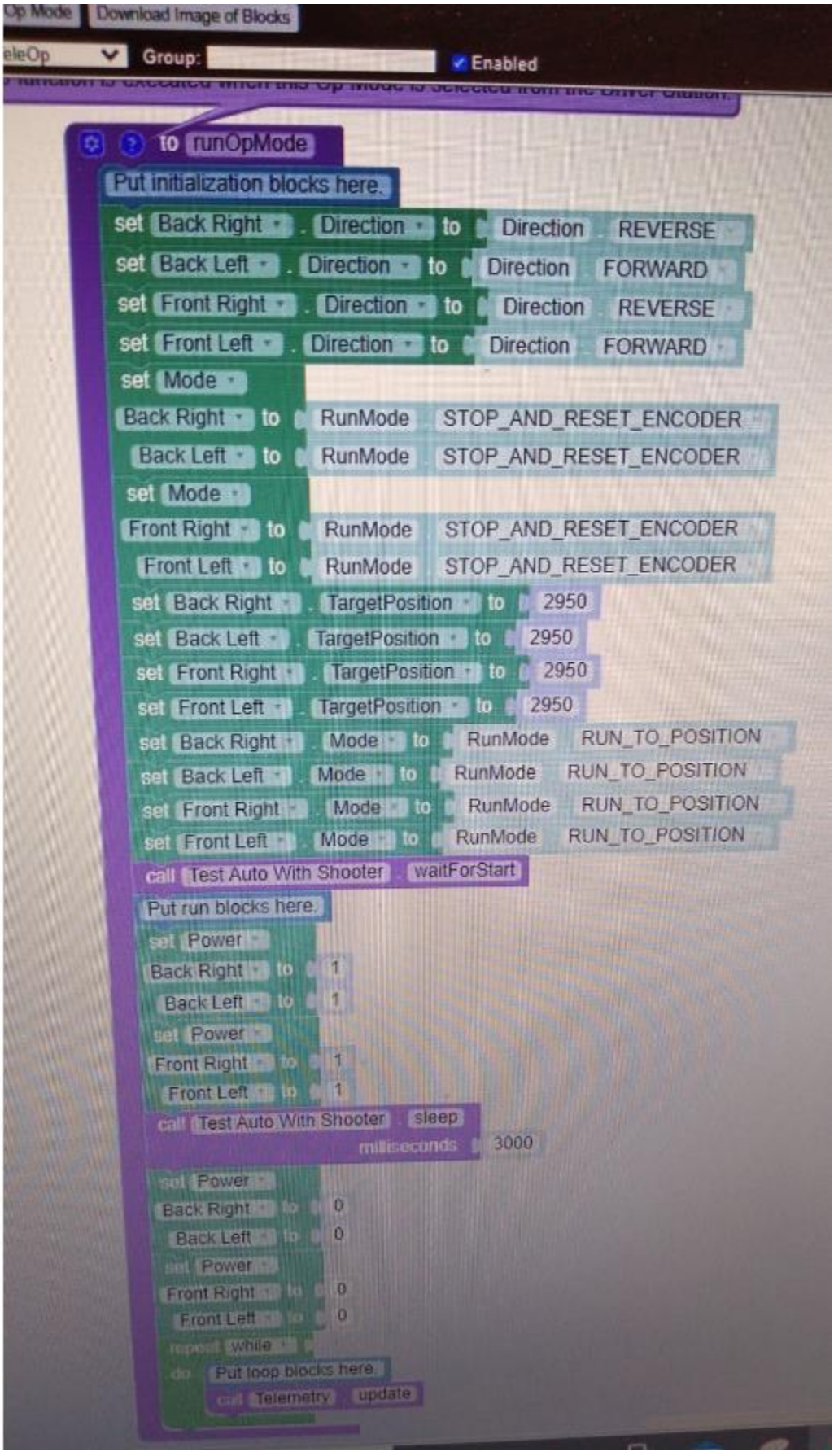

Download Image of Blocks
Group:
Enabled
Put initialization blocks here.
set Back Right . Direction to Direction REVERSE
set Back Left . Direction to Direction FORWARD
set Front Right . Direction to Direction REVERSE
set Front Left . Direction to Direction FORWARD
set Front Pew . Direction to Direction FORWARD
set Back Pew . Direction to Direction FORWARD
set Intake . Direction to Direction FORWARD
set Middle Intake . Direction to Direction FORWARD
call Mecanum Drive with Shooter . waitForStart
if call Mecanum Drive with Shooter . opModeIsActive
do Put run blocks here.
repeat while call Mecanum Drive with Shooter . opModeIsActive
do Put loop blocks here.
set y to gamepad1 . RightStickY
set x to gamepad1 . RightStickX
set z to gamepad1 . LeftStickX
set joy2RightTrigger to gamepad2 . RightTrigger
set Power
Back Right to y + x - z
Back Left to y - x - z
set Power
Front Right to y - x + z
Front Left to y + x + z
20210209_192710.jpg
20210209_192729.jpg
20210209_192731.jpg

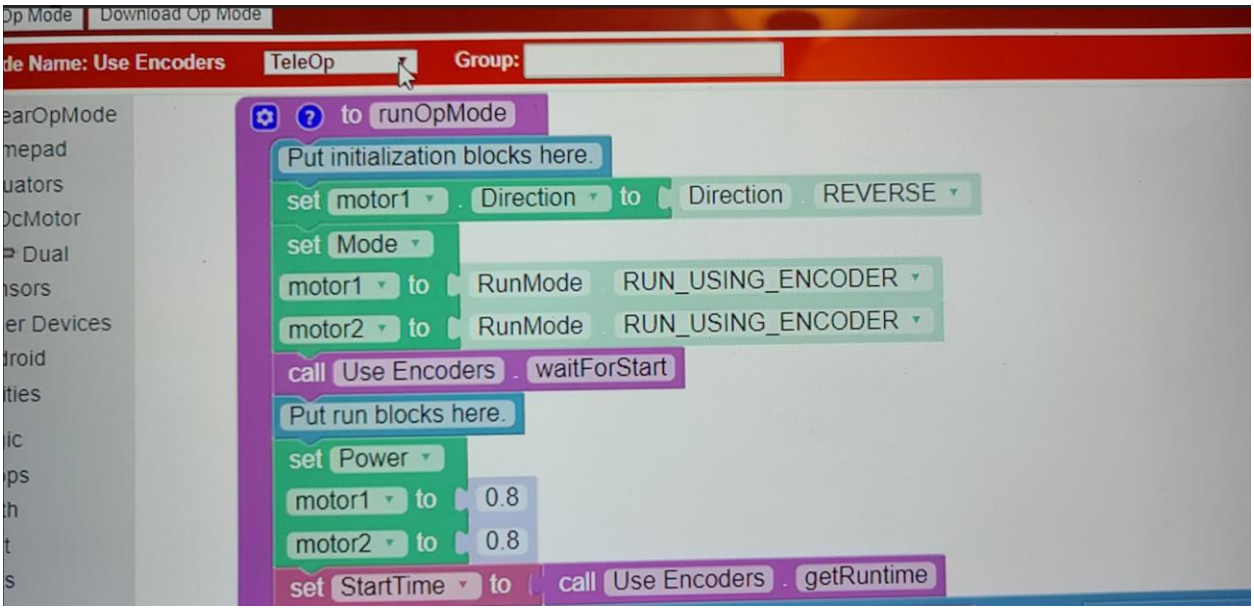

80/?page=FtcBlocks.html?project=Mecanum%20Drive%20with%20Shooter&pop=true
FTC
oad Image of Blocks
Group:
Enabled
set Power
Front Pew to joy2RightTrigger
Back Pew to joy2RightTrigger
set Intake . Power to gamepad2 . RightStickY
set Middle Intake . Power to gamepad2 . LeftStickY
call Telemetry . addData
key " Right Pow "
number Back Right . Power
call Telemetry . addData
key " Left Pow "
number Back Left . Power
call Telemetry . addData
key " Right Pow "
number Front Right . Power
call Telemetry . addData
key " Right Pow "
number Front Left . Power
call Telemetry . update

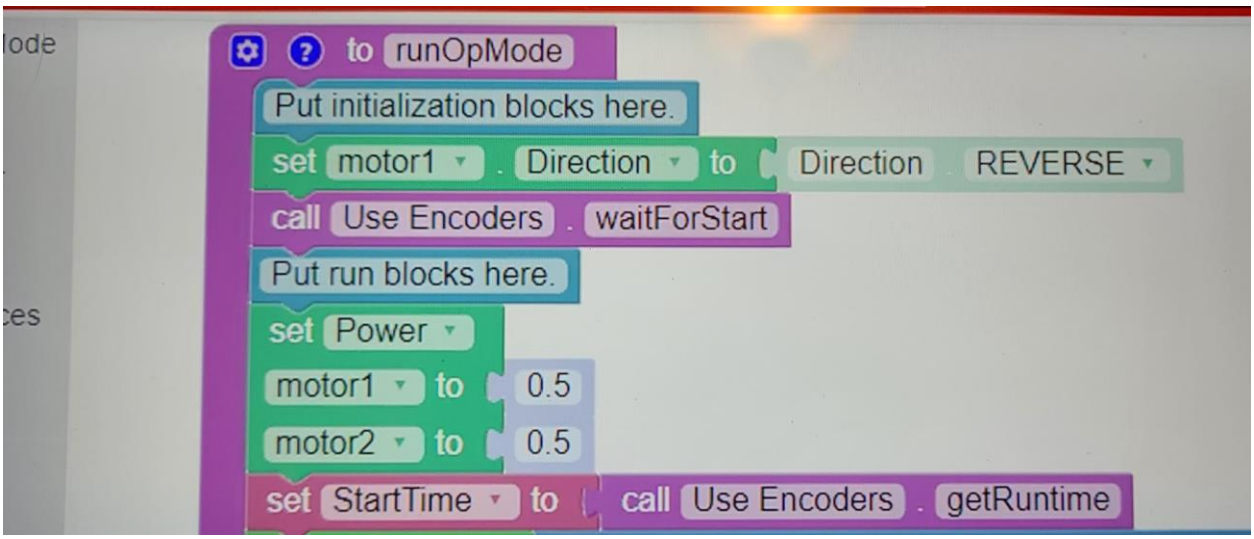

p Mode
Download Image of Blocks
onomous
Group:
Enabled
to runOpMode
Put initialization blocks here.
set Back Right . Direction to Direction REVERSE
set Back Left . Direction to Direction FORWARD
set Front Right . Direction to Direction REVERSE
set Front Left . Direction to Direction FORWARD
set Mode
Back Right to RunMode STOP_AND_RESET_ENCODER
Back Left to RunMode STOP_AND_RESET_ENCODER
set Mode
Front Right to RunMode STOP_AND_RESET_ENCODER
Front Left to RunMode STOP_AND_RESET_ENCODER
set Back Right . Mode to RunMode RUN_TO_POSITION
set Back Left . Mode to RunMode RUN_TO_POSITION
set Front Right . Mode to RunMode RUN_TO_POSITION
set Front Left . Mode to RunMode RUN_TO_POSITION
call Test Auto With Shooter . waitForStart
Put run blocks here.
set Back Right . TargetPosition to 2950
set Back Left . TargetPosition to 2950
set Front Right . TargetPosition to 2950
set Front Left . TargetPosition to 2950
set Power
Back Right to 1
Back Left to 1

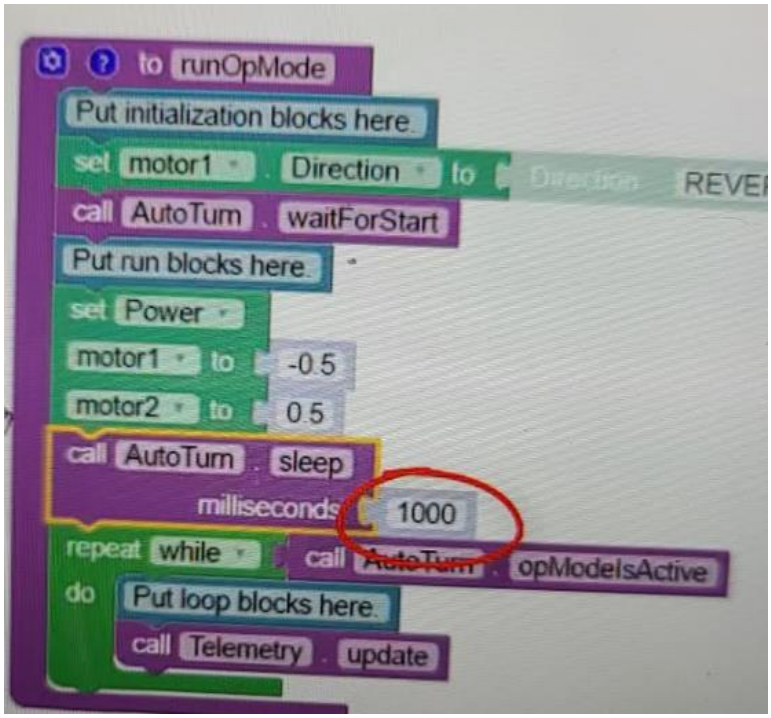

secure | 192.168.43.1:8080/?page=FtcBlocks.html?project=Test%20Auto%20With%20Shooter&pop=true
OnBotJava
Manage
Download Op Mode
Download Image of Blocks
Shooter
Autonomous
Group:
Enabled
call Test Auto With Shooter . waitForStart
Put run blocks here.
set Back Right . TargetPosition to 2950
set Back Left . TargetPosition to 2950
set Front Right . TargetPosition to 2950
set Front Left . TargetPosition to 2950
set Power
Back Right to 1
Back Left to 1
set Power
Front Right to 1
Front Left to 1
call Test Auto With Shooter . sleep
milliseconds 3000
set Power
Back Right to 0
Back Left to 0
set Power
Front Right to 0
Front Left to 0
repeat while
do Put loop blocks here.
call Telemetry . update

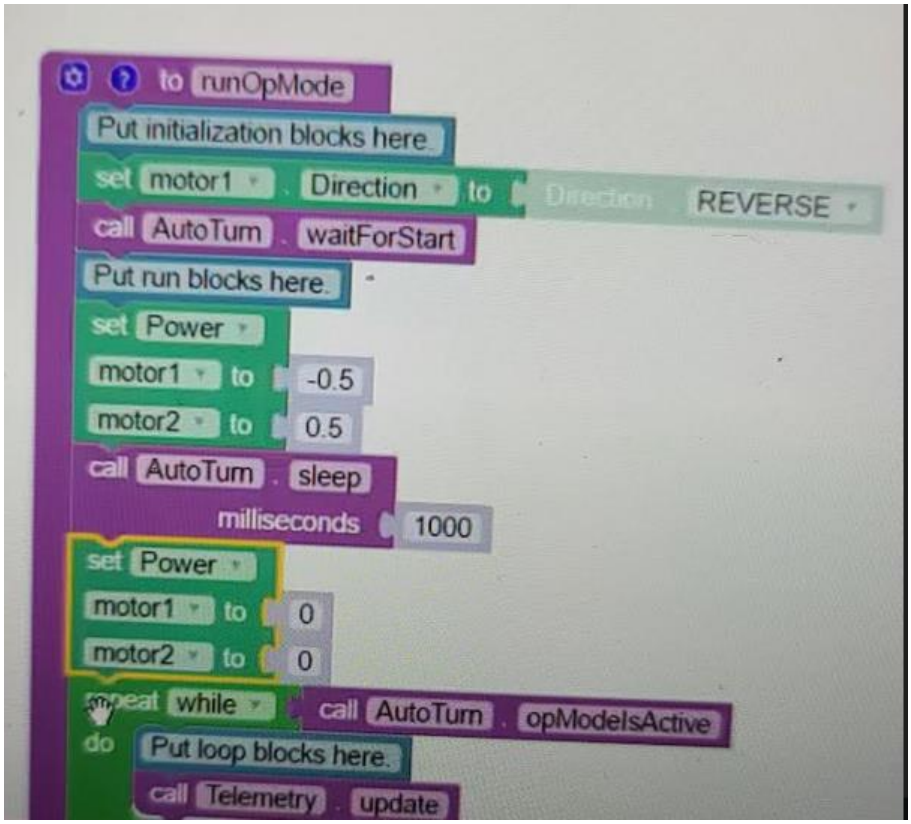

OnBotJava
Manage
Download Op Mode
Download Image of Blocks
Autonomous
Group:
Enabled
to runOpMode
Put initialization blocks here.
set Back Right . Direction to Direction FORWARD
set Back Left . Direction to Direction FORWARD
set Front Right . Direction to Direction REVERSE
set Front Left . Direction to Direction REVERSE
set Mode
Back Right to RunMode STOP_AND_RESET_ENCODER
Back Left to RunMode STOP_AND_RESET_ENCODER
set Mode
Front Right to RunMode STOP_AND_RESET_ENCODER
Front Left to RunMode STOP_AND_RESET_ENCODER
set Back Right . TargetPosition to 2950
set Back Left . TargetPosition to 2950
set Front Right . TargetPosition to 2950
set Front Left . TargetPosition to 2950
set Back Right . Mode to RunMode RUN_TO_POSITION
set Back Left . Mode to RunMode RUN_TO_POSITION
set Front Right . Mode to RunMode RUN_TO_POSITION
set Front Left . Mode to RunMode RUN_TO_POSITION
call Test Auto Strafing . waitForStart
Put run blocks here.
set Power
Back Right to 1
Back Left to 1
set Power
Front Right to 1
Front Left to 1
call Test Auto Strafing . sleep
milliseconds 3000
set Power
Back Right to 0
Back Left to 0
set Power
Front Right to 0
Front Left to 0
repeat while
do Put loop blocks here.
call Telemetry . update


Op Mode
Download Image of Blocks
eleOp
Group:
Enabled
to runOpMode
Put initialization blocks here.
set Back Right . Direction to Direction REVERSE
set Back Left . Direction to Direction FORWARD
set Front Right . Direction to Direction REVERSE
set Front Left . Direction to Direction FORWARD
set Mode
Back Right to RunMode STOP_AND_RESET_ENCODER
Back Left to RunMode STOP_AND_RESET_ENCODER
set Mode
Front Right to RunMode STOP_AND_RESET_ENCODER
Front Left to RunMode STOP_AND_RESET_ENCODER
set Back Right . TargetPosition to 2950
set Back Left . TargetPosition to 2950
set Front Right . TargetPosition to 2950
set Front Left . TargetPosition to 2950
set Back Right . Mode to RunMode RUN_TO_POSITION
set Back Left . Mode to RunMode RUN_TO_POSITION
set Front Right . Mode to RunMode RUN_TO_POSITION
set Front Left . Mode to RunMode RUN_TO_POSITION
call Test Auto With Shooter waitForStart
Put run blocks here.
set Power
Back Right to 1
Back Left to 1
set Power
Front Right to 1
Front Left to 1
call Test Auto With Shooter sleep
milliseconds 3000
set Power
Back Right to 0
Back Left to 0
set Power
Front Right to 0
Front Left to 0
repeat while
do Put loop blocks here.
call Telemetry update


Op Mode
Download Op Mode
de Name: Use Encoders
TeleOp
Group:
to runOpMode
Put initialization blocks here.
set motor1 . Direction to Direction REVERSE
set Mode
motor1 to RunMode RUN_USING_ENCODER
motor2 to RunMode RUN_USING_ENCODER
call Use Encoders . waitForStart
Put run blocks here.
set Power
motor1 to 0.8
motor2 to 0.8
set StartTime to call Use Encoders . getRuntime


to runOpMode
Put initialization blocks here.
set motor1 . Direction to Direction REVERSE
call Use Encoders . waitForStart
Put run blocks here.
set Power
motor1 to 0.5
motor2 to 0.5
set StartTime to call Use Encoders . getRuntime


to runOpMode
Put initialization blocks here.
set motor1 . Direction to Direction REVE
call AutoTurn . waitForStart
Put run blocks here.
set Power
motor1 to -0.5
motor2 to 0.5
call AutoTurn . sleep
milliseconds 1000
repeat while call AutoTurn . opModeIsActive
do Put loop blocks here.
call Telemetry . update


to runOpMode
Put initialization blocks here.
set motor1 . Direction to Direction REVERSE
call AutoTurn . waitForStart
Put run blocks here.
set Power
motor1 to -0.5
motor2 to 0.5
call AutoTurn . sleep
milliseconds 1000
set Power
motor1 to 0
motor2 to 0
repeat while call AutoTurn . opModeIsActive
do Put loop blocks here.
call Telemetry . update