

A Guide to Lego Camp

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Introduction

We are so glad you are interested in running a Lego Camp of your own! Our FRC team, 2491 No Mythic, based in St. Paul, MN, has been running Lego Camp during the summer since 2014 as a fundraiser for the team and as a way to build community in the school. There are so many things we love about Lego Camp and we want to share what we have learned with you. Throughout this book, we will hopefully provide a solid foundation of information and resources for you to create a camp. But first, let's address some questions you probably have...

Why run a summer camp at all?

Many of the best robotics teams run Lego camps during the summer and mentor FLL and FTC teams in the fall. It can be hard to understand why teams decide to put so much effort into these other programs instead of working on their own team. However, there are many ways that working with younger students during Lego Camp, or FLL and FTC can help an FRC team. Running a Lego camp is a great way to fundraise for your FRC team, inspire kids to pursue STEM fields and recruit more students to your FIRST programs. Not to mention, camp is a great experience for campers and counselors alike. Campers learn and grow through camp in confidence and ability while counselors become better leaders and effective guides.

A big benefit of starting a Lego camp is improving the sustainability of your FIRST robotics programs. After camp, many students go on to join FLL and FTC programs. These students tend to stay involved in FIRST through middle school and high school, and may end up on an FRC team. Ultimately, some may return to lead camp themselves!

What is this guidebook?

Clearly, running a camp has many advantages, however, it can be difficult to get off the ground. This guidebook (along with our video series, digital documents and physical toolkit) is intended to provide everything you need to run a camp. From curriculum to enrollment, we have the tools you need to have a successful first year of Lego Robotics Camp.

In this guidebook, we detail the process of planning and running a camp based on what we have found successful in the past. We also provide resources we would have wanted when we were planning camp for the very first time.

What other resources are available?

This guide book is just one of the many resources we have made available to you. On our website (FLLCamp.com) you will find our seven part video series on all the

different aspects of planning and running camp and our customizable digital documents with everything from email templates, media release forms, and lots more. All of these resources are designed to help you make your camp run as smoothly as possible and are free for your team to use! Throughout this guidebook, we will go deeper into each of these tools and how to use them.

We also offer our physical toolkit with all of the components you need for camp. Purchasing all these items would cost upwards of \$2500, but it is available to rent for one week for \$400. More information about what our toolkit contains and how to rent it can be found on our website.

Where do I start?

Start by gauging interest on your team; you will need at least four student mentors and one adult supervisor in order to run camp. Next, explore our resources and decide if camp is right for your team. If it is, begin planning your camp in the fall so you can be ready to start advertising and filling enrollment early. With our tools at your disposal, camp should be a breeze!

Have questions?

Feel free to contact us at legocamp@greatriverschool.org or visit our website at FLLCamp.com. We are happy to help in any way we can!

Thanks for reading!

Laura Schultz & Isaiah Scharen

No Mythic Alumni

Planning for Camp

Planning and creating a Lego Camp is a large undertaking, but hopefully the resources provided in this handbook and in the toolkit will help make it a success for you and your team. Let's get started!

What to do when

There are a lot of things to get done before you are ready for camp and it may be difficult to keep track of all the tasks that need to happen throughout the year. This checklist should give you some guidance and ensure that everything is done on time.

In the fall before running camp...

- Read camp guidebook and watch video series.
- Determine if running a camp is the right thing for your team.
- Find 2 - 4 team members and 1 adult committed to planning and running camp.
- Choose several weeks during the summer that could work for your camp.
- Connect with your school and ask about using the space and insurance coverage for camp.
- If your school cannot host your camp, reach out to 3 - 5 other spaces to see if they would be interested in hosting camp. Ask how much they charge and when the space could be available.
- If your school's insurance cannot cover your camp, reach out to an insurance agent or another school to find a way to be covered.

Before winter break...

- Finalize dates of camp.
- Settle on place for camp and take necessary steps to reserve the space.
- Make a plan for obtaining all the resources necessary for camp.
- Prepare registration form.
- Prepare advertising materials.

Early in the spring before camp...

- Start advertising.
- Open registration.
- Respond to families that register.
- Keep track of camp enrollment.

Before the end of the school year...

- Confirm that students will be attending camp.
- Confirm with the space that camp can happen there.
- Finalize insurance plans.
- Find student volunteers to work at camp. You will need 1 counselor for every 3-4 campers, at least one adult supervisor and a camp director.

A week or two before camp...

- Send email to families with camp details.
- Collect the necessary resources.
- Make sure you have keys to the spaces you will be using.
- Hold a training day with all camp volunteers.

Finding a space and setting a time

Most parents and families start planning their summer schedules in January-March, so it is important to secure a location and time as soon as possible in order to begin advertising for your camp early. There are many things to consider when deciding where and when to hold camp:

- Cost of renting space. Usually it works best to hold camp at the school. Counselors are familiar with the space and the available materials, and the classroom can usually be used free of charge. However, if this isn't possible, look for nearby schools or rec centers. Renting a room can easily eat up a large portion of your budget, so plan carefully.
- Convenience of location. If your team is advertising to families of students at school, the location should be close to school to appeal to parents and counselors.
- Availability of counselors. To make camp a success, you need a team of dedicated and passionate counselors to work with each group of campers. These counselors will probably be members of the robotics team. Make sure that you are holding camp on a week that counselors will be able to attend. You need at least one counselor for every 4 campers.
- Availability of adult supervisor. Although trusted camp counselors will be working with the students, it is necessary to have an adult on the premises at all times. Check with robotics team coaches and mentors to find someone willing to volunteer and make sure that camp will be held at a time that works with their summer schedule.
- Some locations will require you to provide an umbrella insurance policy in order to use the space. Make sure to ask about what insurance requirements you need to meet.

Cost and size of camp

Once you have secured a place and decided on a week, you need to set a cap for how many campers you will accept and a cost of attending camp. We recommend accepting 12-16 campers (depending on how much space you have) and charging \$150 - \$200. This has worked well for us in the past, but choose numbers that work well for your situation. You might need to charge more for camp if you have to rent a location. Just remember to balance charging an affordable price with earning enough money so that camp is worthwhile for your team.

Registration

Once you have decided on dates, space, size and cost, it's time to create a registration system so you can begin registering campers! Our team has found Google Forms to be the best way to get campers registered. A template available for you to use can be found at tinyurl.com/SampleRegistrationForm. (Note: Log in to your Google account and then click "Make a copy". Please do not edit the original form so that it is available for others to use.)

When someone signs up for camp, send them an email confirming that they got a spot and confirming that they plan on attending camp. Sample email templates can be found in the resources section of our website.

When you reach your cap for campers, take down the registration form and put up a friendly notice saying that the camp is full. If you overbook your camp, create a wait list in case some campers cannot make it.

Advertising

Begin advertising for your camp as soon as you know the date and location. If your school has FIRST Lego League or FIRST Tech Challenge teams, emailing those families is a good way to get students enrolled. Check out the Advertising Email Template in the digital documents. Many schools have an online forum, Facebook page, or newsletter for parents. Share the link to your registration form or website, if you have one. Creating a poster to display in the school's entryway is another effective way to get the word out. There is a poster template in the digital documents, or you can create your own.

Collecting materials

The biggest cost of camp is the physical materials (\$2000+), so you have to get creative with sourcing your materials. If your team is connected to an FLL program,

see if you can use their robots and computers. If not, you can rent one of our physical toolkits for the week (for more information about our toolkit and how to rent it, please visit fllcamp.com/physical-toolkit). They come with everything you need for camp. You can also make your own camp toolkit using this shopping list:

- Laptop and charger w/EV3 software installed (4x)
- Challenge Table (1x)
- Masking Tape (several colors)
- EV3 Education (or Home) Core Kit (4x)
- Rechargeable Battery (4x)
- Stopwatch (2x)
- Measuring tape (2x)
- Basic First Aid Kit (1x)
- Power Strip (1x)
- Pens (Many)
- Extra Legos (Many)

Curriculum planning

With most of the administrative persnickety taken care of, it is time to move on to the fun stuff: the camp! In the following sections of this guidebook we will go over details of the curriculum and operation of camp.

Executing Camp

A week in the life of Lego Camp

It is difficult to describe the exact steps needed to prepare for camp once you have a space, a time, volunteers, materials and campers, so we will start with an overview of a week of camp. This will hopefully put you in the mindset of camp and get you thinking about what you need to do to be ready.

Monday

Camp starts at the check in table around 9:00 am. As campers arrive, you introduce yourselves to the parents, give the camper a name tag and check them in. On day one we typically collect payments and have parents sign release forms, but this could be done ahead of time. While we wait for everyone to arrive, some counselors lead games outside to break the ice and pass the time.

Once all the campers have arrived, we circle up and play a name game to get started. In this circle, we go over the flow of camp: what will we be doing, when is snack, where are the bathrooms, etc. We finish up by brainstorming a list of norms to make sure the week goes well. Examples of good norms are: clean up after yourself, respect others and their belongings, treat each other with kindness. Ideally, the campers come up with the norms for the week so that you don't have to dictate them. If something is left out, just make a suggestion, someone is sure to go along with it!

Next, move inside to the work area and split up the campers into groups of 3 or 4. Each group should come up with a team name and create a sign for their workstation. One counselor should work with each group throughout the week to offer help when problems arise.

Now it is time to reveal the challenge. Take all the groups over to the race track and explain what they need to do to complete the day's challenge. They then have until 10:30 to get started on a solution to the problem. On the first day, counselors should gauge the experience levels of campers and offer a brief introduction to the EV3 and its components. It can be helpful to have part of the group focused on building and part focused on programming.

At 10:30, gather everyone outside for a snack break and a game. Before heading out, have everyone put down what they are working on and save their programs. After break, the groups reset and dive back into the challenge until 11:30. About 15

minutes before this deadline, give each group a heads up so they can be ready for the challenge demonstration.

At the challenge demonstration, have all the teams race their robots down the track. Award two teams with a trophy, one that rewards an excellent solution to the challenge and another celebrating something worth celebrating. (i.e. team spirit, robust or artistic design.)

After everyone has shared, clean up from the day and bring the campers outside to play until check out. At checkout (around 12:00), collect name tags and have the parents sign that they have picked up their child. Once everyone is gone, do a final clean up, plug in everything that needs to charge and head out for the day.

Tuesday - Thursday

The rest of the week follows a similar pattern: check-in, game, challenge, work, snack, game, work, demonstration, clean up and check-out. You will get the hang of it and so will the campers - one of the benefits of a regular schedule from day to day. Under the Daily Schedule section, you will find a generic schedule you can follow roughly each day of camp.

Friday

Friday goes a lot like the other days, but the challenge demonstration should happen a little earlier. After the demonstration and a good cleaning of the space, bring all the campers outside for awards. Each student should receive an award for something their counselor recognised as wonderful. We often have fun naming the awards after inventions, scientists or famous makers, that way the award is both celebratory and educational. You can find an award template in our digital documents. End the week by having the campers fill out a camp evaluation form.

At check out, thank campers and parents for a great week at camp. Make sure the campers take their awards home with them.

Daily checklist

Here are the essential things to successfully set up for camp before the week starts, each day during camp and after the week is over. It is essential to ensure that your space is ready for campers when they arrive. We try and have the space ready to go 15 minutes before we anticipate students arriving.

Prep for camp!

- Set up materials table with paper, pencils, tape for campers
- Set up charging station for laptops and robots
- Set up workstations for teams
- Print out media release forms and check in/out sheet
- Plug in Laptops and Robots to charge
- Mail out reminder to families about camp hours and dates, check in and out procedures and contact information if they need to call you during camp

Before camp each day...

- Set up challenge field
- Clean up Lego station and materials table
- Set up check in station to check in campers
- Prep Snacks

After camp each day...

- Make sure all robots are turned off and charging
- Save all programs
- Plug in laptops to charge overnight
- Take down the challenge from the previous day
- Clean up stray Legos

Cleaning up at the end of the week!

- Clear programs from all robots and computers
- Turn off all robots and computers
- Take apart all robots & contraptions
- Sort Legos back into original boxes
- File away media release forms somewhere safe
- Pack up all borrowed equipment and return it
- Send email out thanking everyone for a great week of camp
- Make sure and leave your space better than you found it at the end of the week

Daily schedule

8:30 Set up check-in table and gather counselors

Make sure parents have paid and signed the media release form at check in. Give campers nametags when they check in.

9:00 Gathering games

For the first couple of days, be sure to play a name game once everyone has arrived for the day. This will help everyone get to know each other better.

9:20 Introduce Challenge

It is fun to introduce the challenge in a dramatic way. Create a magical moment campers look forward to each day!

9:25 Work Time

Break campers up into groups of 2-4 (depending on how many mentors you have). Have one student mentor work with each group to guide them as they tackle the daily challenge.

10:30 Snack break

As fun as working with Legos can be, it can also be tiring and frustrating. Use the snack break as a chance to get campers away from their work. This can be a good time for a quick game or free time outside.

10:45 Work time

After a break it can be hard to get students back into work. It can be helpful to remind them of the problems they were working on solving before the break or introducing a new idea they hadn't thought of yet.

11:30 Challenge Demonstration

Make sure to give a 15 minute heads up before the challenge demonstration so that campers can wrap up their projects. At the challenge assessment, give each team a chance to talk about what they worked on that day and demonstrate their solution to the problem. Be sure to celebrate each solution honestly and not to define winners and losers. Everyone's work should be honored.

11:50 Setup check-out desk and clean up

Have campers clean up their workstations before gathering for games and free time until their parents check them out.

12:00 Games and checkout

Camper-counselor interactions

Your camp counselors are the key to making Lego Camp a success. Counselors need to walk a fine line between making camp a fun, high-energy environment and keeping campers engaged and focused on their challenge. First and foremost, your campers should be having fun at camp. If they don't meet the goal that was assigned at the beginning of the day, it's no big deal! Keep that in mind when working with the campers. Encourage your counselors to have a positive attitude when working with the campers, to celebrate their achievements, no matter how small, and to not get so caught up in the challenge and its requirements that the campers are stressed out and not enjoying themselves.

Ask questions, don't give answers. Campers may feel frustrated or overwhelmed at the beginning of the day if they can't immediately come up with a solution for the daily challenge. Encourage them to break down the problem or task into small pieces until they have a solution that feels manageable. Alternatively, campers might immediately dream up a complex solution to the challenge but have no idea how to begin to build or implement it. Again, you should encourage them to break up the challenge into small pieces and ask how they plan on completing each piece. Help campers realize their own ideas, but you should never be doing all the work for campers or telling them exactly what to build.

Awards

You may want to consider creating various prizes to recognize campers' achievements and unique or clever solutions to a problem. In the past, we have created two daily awards-- one for a creative or advanced solution to the daily challenge and another for a team that did something worth celebrating (such as team spirit or artistic design). These awards can be displayed by the campers on their workspace the next day and given out to another team at the end of the day. A fun addition is to have the team that wins the award one day chooses the winner the next day. This prevents one team from winning every day and encourages campers to appreciate each other's work.

Challenges

Recommended challenges

This is our recommendation for a week at camp, but be sure to tailor your camp to the abilities and ages of your campers. See *Other Challenge Options* for some other ideas you could try. Remember that the challenges are just a means for fun and learning. If campers have their own idea or want to modify the challenges, just roll with it!

Day 1: Locomotion

- Learning Outcome: Make a robot that can move and learn about different sensors.
- Challenge: build a robot that can complete a 15 ft race in a straight line.
- Stretch Challenge: Make your robot stop in END BOX (1 ft deep) at finish line.

Day 2: Sorting Machine

- Learning Outcome: Combining mechanical engineering with sensor input to achieve a simple task.
- Challenge: Sort 20 balls by color into two piles.
- Stretch Challenge: Select for small balls in a bunch 2 different sizes then sort those by color.

Day 3: Labyrinth

- Learning Outcome: Combining skills learned on day one and two to solve a puzzle.
- Challenge: Navigate a labyrinth (with no wrong turns) autonomously.
- Stretch Challenge: Navigate the maze by determining which turns are dead ends and choosing the correct turns.

Day 4: Recovery

- Learning Outcome: Creating a complex machine by adding armature to a driving base in order to complete a complex task.
- Challenge: Climb a wire mesh tower to retrieve pieces and return them to a container. Most pieces collected in under 1:30 wins.
- Stretch Challenge: Sort “infected” pieces from “clean” pieces.

Day 5: Candy Corral

- Learning Outcome: End the week with a fun competitive challenge.

- Challenge: Build robots to traverse field and collect different candies under teleoperated control.
- Stretch Challenge: Shoot collected candy out of the arena. Bonus points if they land in a bowl.

Challenge field set up

The basic challenge table is modeled after the challenge table for FIRST Lego League so that it can be used year round. It is built from a 4'x8' sheet of ¾ in plywood and 4 2x3s. The 2x3s create a border around the table and divide the board in two. We recommend glueing the border pieces in, but only using screws to install the divider. This is to allow for easy removal/adjustment. Painting the border of the table black and the floor white is optional, but it does improve the function of various sensors.

If you decide to get the physical toolkit, it will come with a collapsable challenge table and all the pieces need to set up each day's challenge.



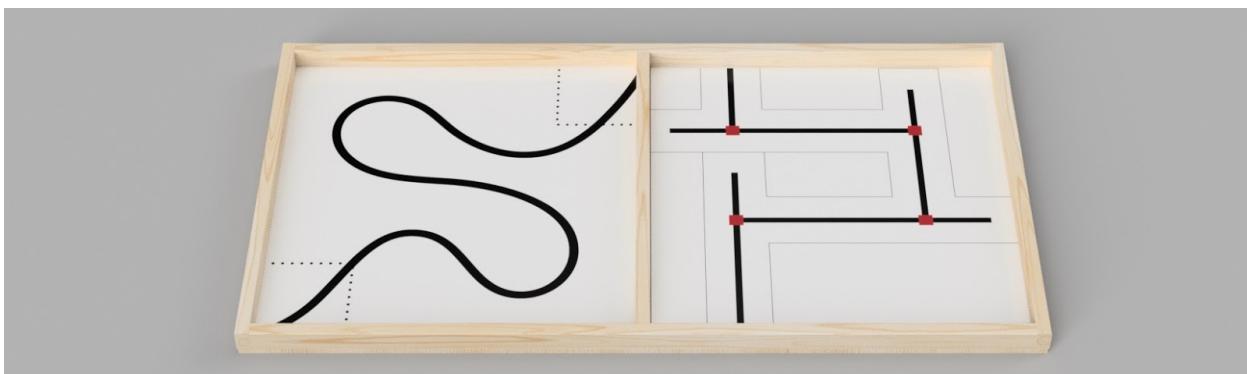
For *Locomotion*, tape out a race track on the ground that is 6ft wide and 15ft long. Make the finish line a different color than the border and create a 1ft deep end zone for robots to finish in.



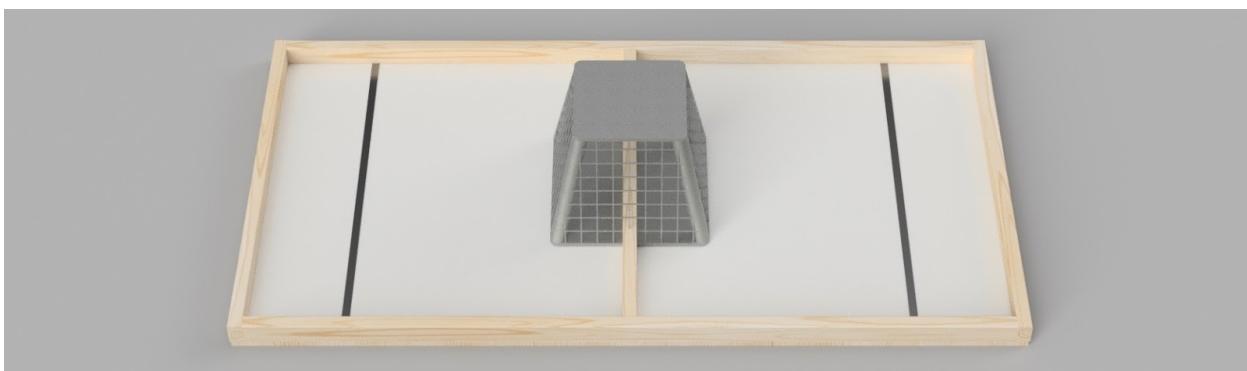
For *Sorting Machine*, all that is needed is the challenge table with a divider down the center. Robots can either perch on the central divider or sit on the floor of the table while sorting.



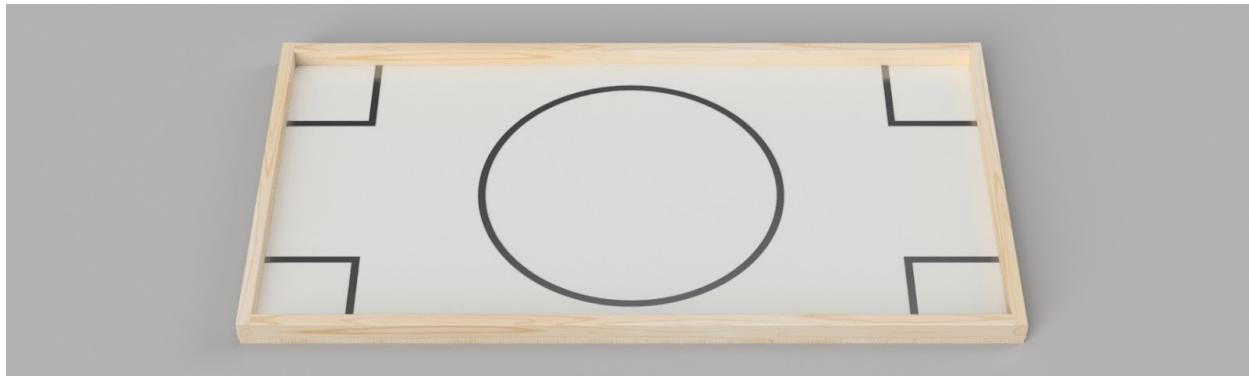
For *Labyrinth*, the table is divided into two sides. On one side, create a smoothly meandering line from one corner to the other. This is the labyrinth side of the challenge. On the other side, construct a simple maze out of cardboard. The walls should follow a similar path to the one on the right below. Use black tape to mark the center of the track and red tape to mark decision points. At each decision point, be sure that the dead end is closer and the correct path is longer.



For *Recovery*, clear all tape off of the table and insert a tower. This should be made from wire fencing and plywood. (Schematics can be found later on in this guidebook). Place the objects students need to recover in on top of the tower.



For *Candy Corral*, everything should be cleared off the table. Each team gets assigned a corner where they determine how to contain their candy. Candy is then piled in the center of the table.



Other challenge ideas

Robotic Picasso

- Challenge: Attach a dry erase marker to the robot and use it to draw an image on a whiteboard. Example: Smiley Face
- Stretch Challenge: Write a word out on the whiteboard.

Indiana Jones

- Challenge: Build a robot capable of climbing a 2 ft rope.
- Stretch Challenge: Have the robot deploy a grappling hook to climb instead of using a pre-existing rope.

Trash Collection

- Challenge: Score the most points possible by collecting various objects from the opposite side of the wall autonomously.
- Stretch Challenge: Build a robot that can traverse the wall to collect pieces.

All Terrain Robots

- Challenge: Build a robot and program it to traverse an outdoor course with diverse terrain.
- Stretch Challenge: Have robots race through the course to see who can complete it in the least time.

Resources

Renting our Physical Toolkit

For many teams the cost of buying everything necessary to run a camp is too high to benefit financially from camp. To make it easier for teams to afford and benefit from camp, we offer a toolkit complete with everything needed for one week of camp.

Here is the financial breakdown. One week of camp with 16 campers paying \$150 each renders \$2400 income. Unfortunately, that is not enough money to cover the computers, Legos and extra parts needed for camp. Our toolkit costs only \$400 to rent for a week of camp. The cost of the kit goes towards updating and replacing parts and paying our administrative director to be available for you. This leaves your team with \$2000 to pay for insurance, space and snacks. The rest of the money can go directly to your team!

If your team decides to use our toolkit, we offer delivery, support and pickup of the kit. We deliver the complete kit on the Saturday before camp starts. At that point, the kit has already been inspected and tested so that it is ready to go. Our camp administrative director is available in person when the kit is dropped off and via phone throughout the week if any problems arise. After camp on Friday, the administrative director comes to collect the kit. If there are any new damages to any components of the kit, your team will be held financially responsible.

The kit comes with:

- Printed Camp Guidebook
- 4 EV3 Education Kits
- 2 Expansion Kits
- 4 Laptop Computers & Chargers
- 1 Challenge Table & Challenge Pieces
- Tape
- 4 Stopwatches
- 2 Measuring Tapes
- 1 Power Strip
- 1 Extension Cord
- 1 First Aid Kit
- Name Tags
- Sharpies, Pens & Pencils
- Paper

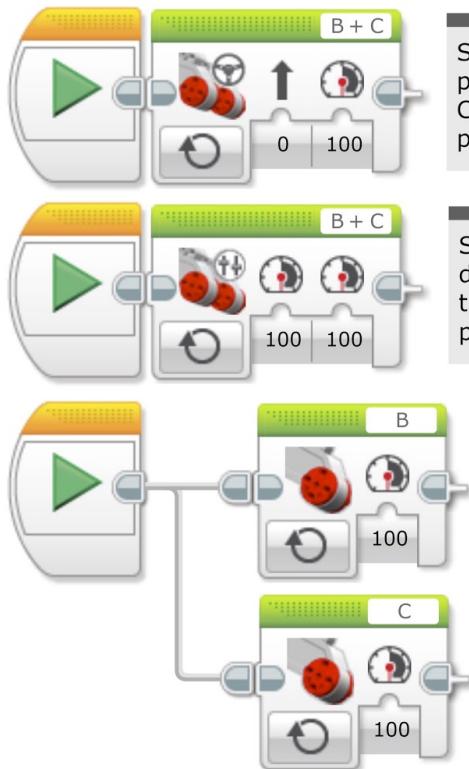
To begin the rental process or for more information, visit our website fllcamp.com or email us at legocamp@greatriverschool.org.

Example programs

These are examples solutions to the five recommended challenges. These are by no means the only ways of solving the problems, but they illustrate the tools necessary. If you choose to use alternative challenges or design your own, the heart of these programs will still be applicable.

Some useful online resources for learning the EV3 programming software can be found in the *Additional Resources* section.

Locomotion

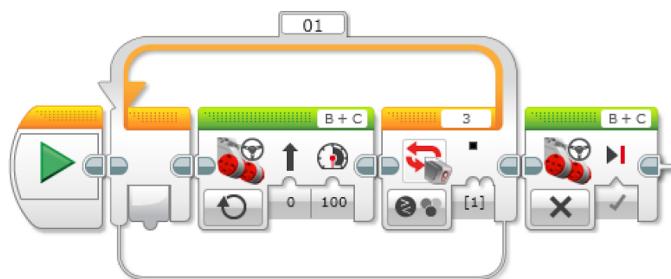


Solution Example 1: Use the steering block on full power to drive both wheels in a straight line. Choose 100% power for the highest speed possible.

Solution Example 2: Use the tank drive block to drive two motors independently. In order to keep the robot traveling in a straight line, use 100% power for both wheels.

Solution Example 3: Use two large motor blocks to drive two sides of the robot. Choose 100% power on each wheel in order to drive the robot straight. Simply drag a wire from the start of the program to each block in order to make them move in tandem.

Locomotion Stretch Challenge



Solution Example 1: Use a loop to stop the robot based on sensor information. This could be a color sensor measuring the color of the finish line or an infrared sensor measuring a distance from the wall. No matter which sensor you use, this is the basic design of the program.

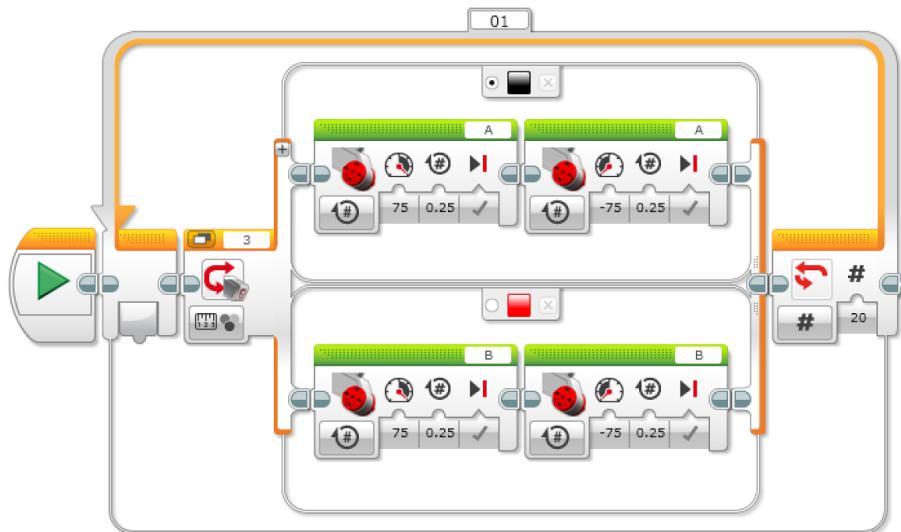


Solution Example 2: Use the steering or tank drive block to stop the robot based on how long the program has been running. Measure how long it takes the robot to finish the race in a couple of trial runs and then use that data to tell the program when to stop.

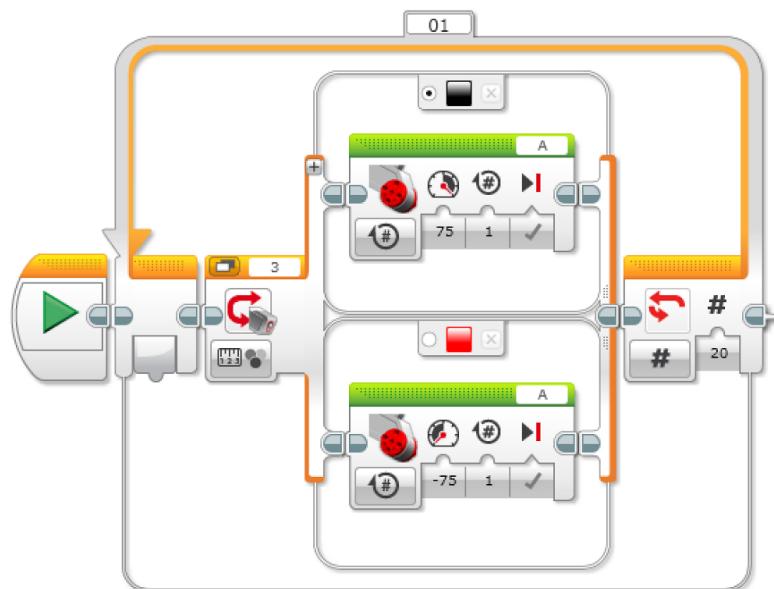


Solution Example 3: Count the number of rotations necessary to finish the race. Use the steering or tank drive block to move the robot the desired distance.

Sorting Machine

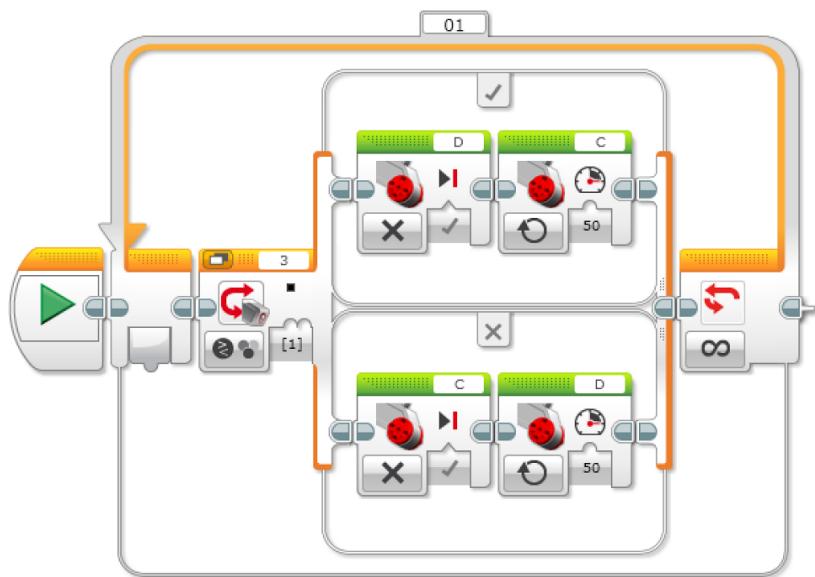


Solution Example 1:
Use a loop to "sort" 20 times. "Sort" using a switch based on the color sensor measure function. Depending on the color, activate different motors to move the ball to one side or the other.



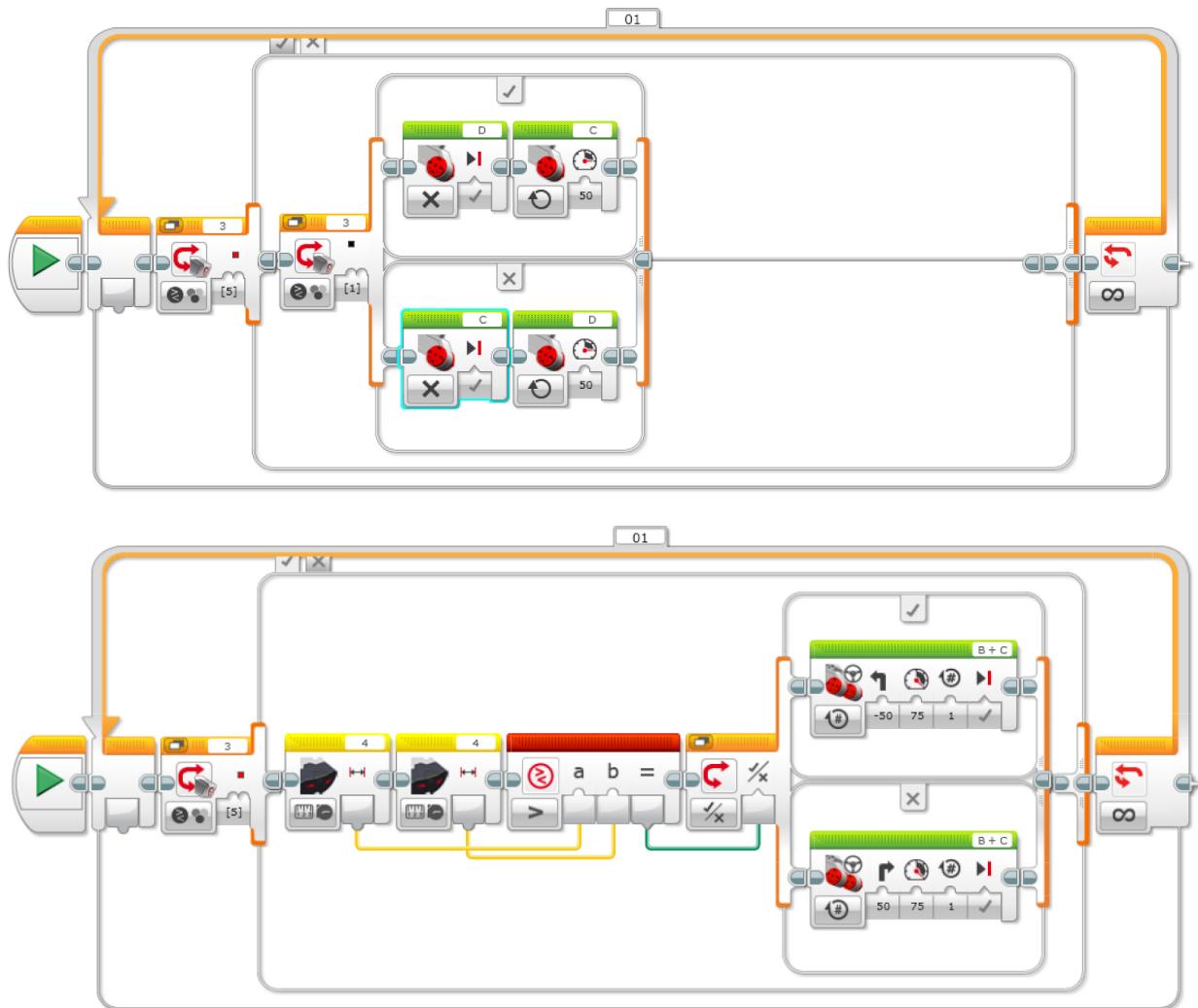
Solution Example 2: Use a loop to "sort" 20 times. "Sort" using a switch based on the color sensor measure function. Depending on the color, activate the same motor in different directions to sort the balls.

Labyrinth



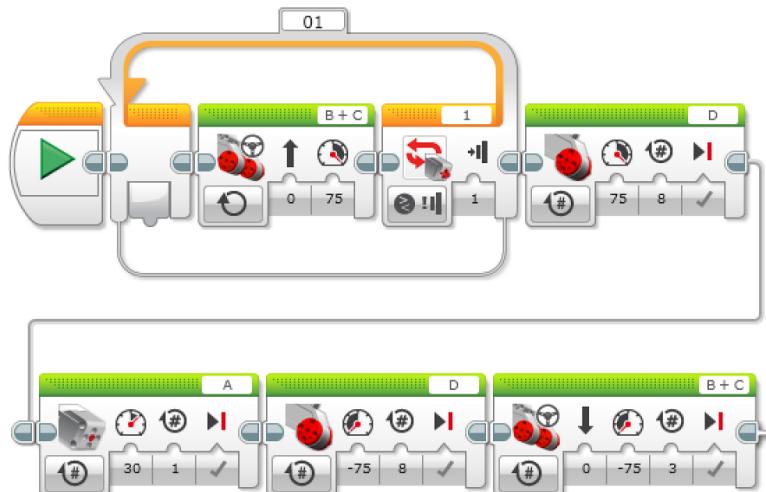
Example Solution: Create a looped switch function that determines whether the robot is driving above the line or the floor. If it sees the line, drive the left motor. If it sees the floor, drive the right motor. Use lower power for more control. This will follow the edge of the line through the labyrinth

Labyrinth Stretch Challenge



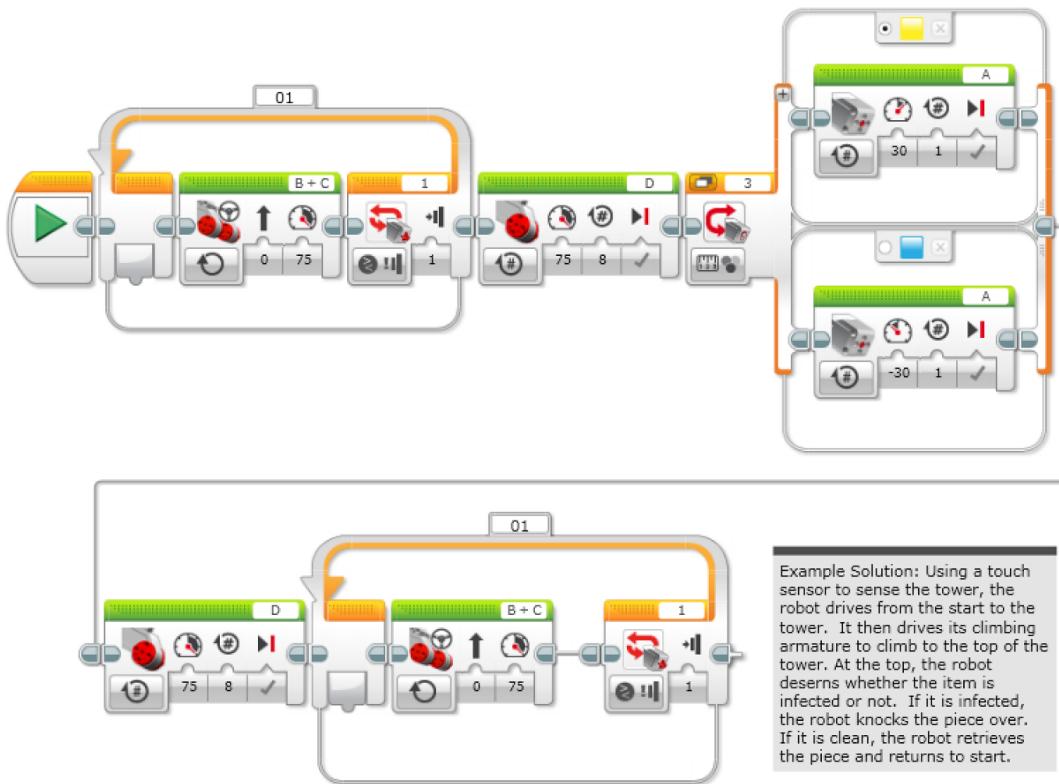
Example Solution: Each junction in the maze is marked with a line of red tape under the black tape on the ground. The switch looks for red. If it does not see red, it continues following the black line through the maze. If it does see the red line, it looks left and right to see which direction is further. It chooses the longer path and turns in that direction. This way the robot ideally follows the line through the maze and makes the correct decision when it needs to.

Recovery



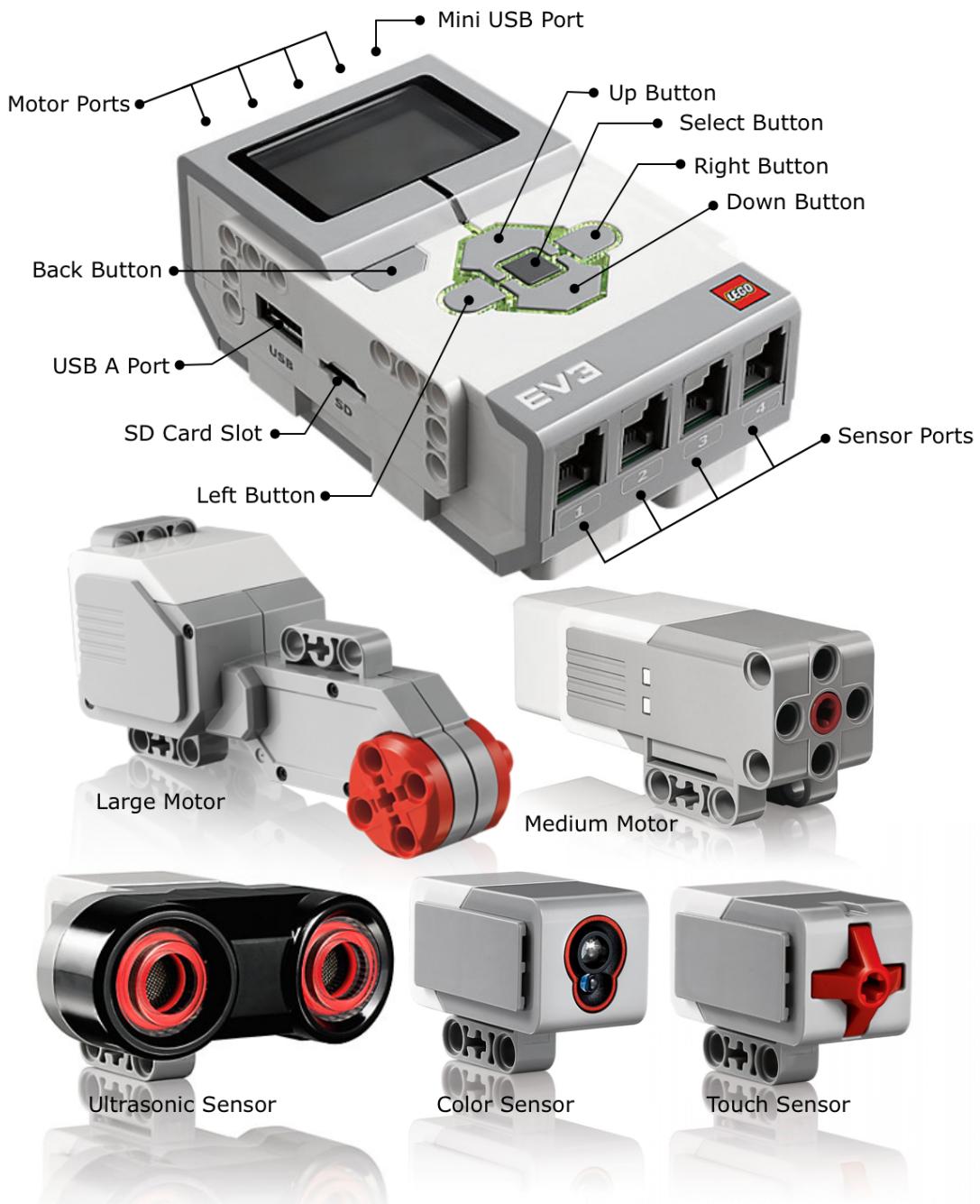
Example Solution: Using a touch sensor to sense the tower, the robot drives from the start to the tower. It then drives its climbing armature to climb to the top of the tower. It then activates a hook to grab the item and returns down the tower and back to the start.

Recovery Stretch Challenge



Example Solution: Using a touch sensor to sense the tower, the robot drives from the start to the tower. It then drives its climbing armature to climb to the top of the tower. At the top, the robot discerns whether the item is infected or not. If it is infected, the robot knocks the piece over. If it is clean, the robot retrieves the piece and returns to start.

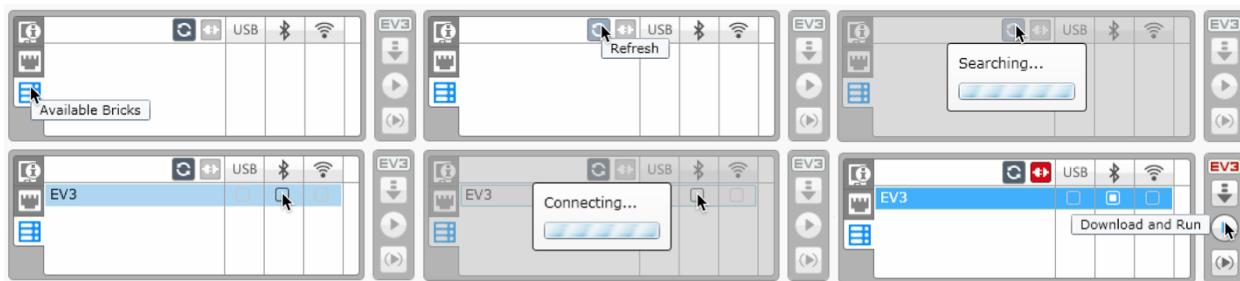
Parts of the EV3



Bluetooth connection

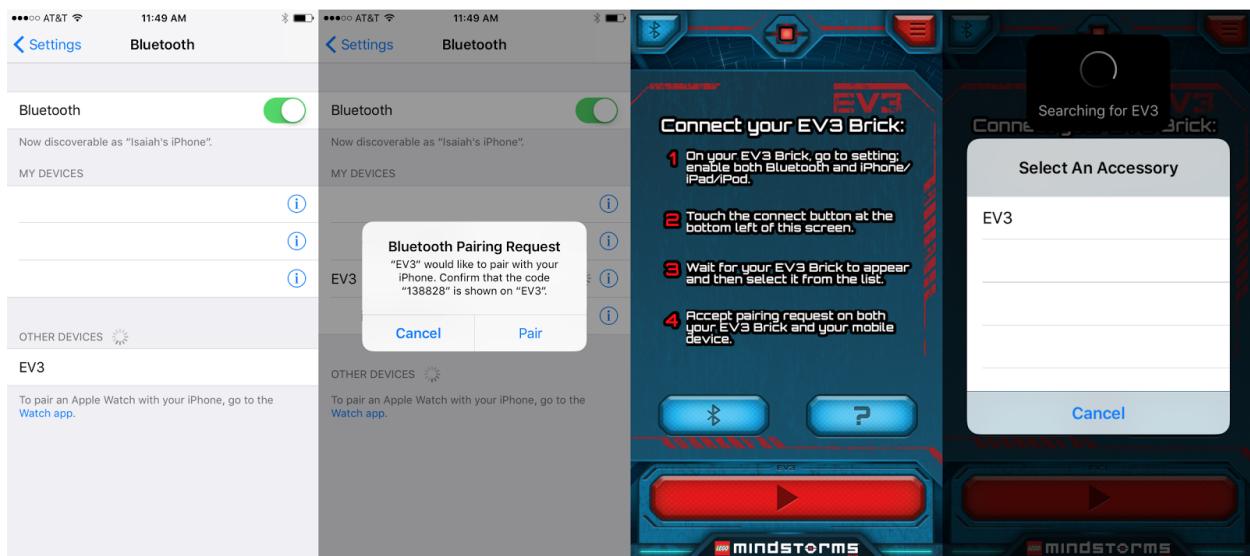
Connecting to a computer over Bluetooth

- Turn on bluetooth on the computer
- In the settings menu on the EV3, turn on Bluetooth and visibility
- Pair the EV3 with the computer. If this fails, be sure that the pairing codes match between the EV3 and the computer. The default for Macs is 0000.
- In the EV3 programming software, reload the devices list
- Check the bluetooth box that appears next to the EV3
- You are now connected!



Connecting to a iPhone, iPod, or iPad over Bluetooth

- Turn on Bluetooth on iPhone, iPod, or iPad
- In the settings menu on the EV3, check iPhone, iPad, iPod and visibility.
- Pair the EV3 with the iPhone, iPod, or iPad.
- In the EV3 app, choose the EV3
- You are connected and ready to use remote control!



Game ideas

Games are an essential part of a fantastic camp. Here are some games we have had fun playing in the past. A simple google search of "Fun Camp Games" will turn up hundreds more if you need more ideas.

Name games

- "*Memory*" - Everyone sits in a circle. One person starts by saying their name. The person next to them says the first person's name, then their own. Gameplay continues in a circle with everyone saying the name of everyone before them. Can also be played where everyone says their name and a food that begins with the same letter, like "Gregory, green beans". Can also be done in conjugation with a movement. When a name is said, everyone in the circle repeats the movement.
- "*Farty Fun*" - Take a roll of toilet paper and ask a person how many squares they want, but don't tell them why. Set a limit, eg from 5 to 30. Give each camper the amount of squares they asked for. Repeat until all the campers have desired amount. Go around and have each person say stuff about themselves for each square until they are finished. The first square has to be their name.
- "*Who's Missing?*" - The children sit in a group and close their eyes. The person running the activity walks around and taps one person on the shoulder. The person that got tapped leaves the room or hides somewhere where no one can see them. Everyone opens their eyes and tries to determine who is missing. To make it harder, have them stand up and move them around (while their eyes are closed) so they don't know who is near them.

Play games

- "*Robot*" - Groups of 2-4 campers are made. One student is acting as the "robot" and the others have to get them to do a certain task using basic commands ("walk 3 steps forward" "lift your left arm"). The "robot" does not know what their task is. This game could be made more advanced if the robot couldn't see, and therefore needed more specific commands.
- "*Frogger*" - Everyone sits in a circle. One person is chosen to be the frogger, and one is chosen as the detective. The frogger tries to kill other people in the circle by making eye contact with them and sticking their tongue out. The detective sits in the center of the circle and tries to determine who the frogger is. The game ends when either the frogger kills everyone or the detective guesses the frogger in 3 tries or less.

- “*Four square*” - If you don't know how to play four square, visit: squarefour.org/rules

Team building challenges

- “*Moonshot*” - In groups of 2-4, campers build the tallest tower they can from newspaper and 4 inches of Duct Tape. The towers must be able to support a golf ball.
- “*Human Knot*” - Campers form a circle and hold hands with people across from them. No two campers should be holding only each other's hands. The group must then untie their “knot” without letting go of each other's hands. You can modify this challenge by requiring that only one person may speak and all other team members have to remain completely silent. Ask them to reflect on the group dynamic at the end of the game.

Snack ideas

Here are some ideas for snacks we have used in the past. Snacks can be distributed easily in small reusable cups if they are not prepackaged. Make sure to keep any food sensitivities in mind when planning snacks for camp. (Allergies, special diets, etc.)

- Goldfish
- Assorted chip bags
- String cheese
- Granola bars
- Baby carrots
- Apple slices
- Cheese cubes
- Popcorn

Additional Resources

Our Resources:

- Website: FLLCamp.com
 - Links to our Digital Documents and "Running a Lego Robotics Camp" video series can be found on our website.
- No Mythic Website: 2491nomythic.com

Lego Kits:

- Education EV3 Kit:
education.lego.com/en-us/products/Lego-mindstorms-education-ev3-core-set-5003400
- Home EV3 Kit: shop.lego.com/en-US/LEGO-MINDSTORMS-EV3-31313
- Extra Pieces Kit:
education.lego.com/en-us/products/lego-mindstorms-education-ev3-expansion-set/45560
- Rechargeable Battery:
shop.lego.com/en-US/EV3-Rechargeable-DC-Battery-45501

Software Downloads:

- Education Software: education.lego.com/en-us/downloads/mindstorms-ev3
- Home EV3 Software:
www.lego.com/en-us/mindstorms/downloads/download-software

Programming Resources:

- Lego.com/en-us/mindstorms/learn-to-program
- ev3lessons.com/lessons.html#en-us
- education.rec.ri.cmu.edu/content/lego/ev3/preview/

Minnesota FIRST

- HighTechKids.org
- mnFIRST.org

Disclaimer

We wrote this guidebook to the best of our ability as an educational tool for FRC teams interested in running summer camps of their own. We make no claim that this guide is comprehensive and take no responsibility for negative consequences of its use. **You are responsible for your own choices, actions, and results.** FRC team 2491 No Mythic, Mythical Robotics, and Great River School are in no way legally or financially responsible for the way you operate your camp..