

# Soccer Robot

In this project, we will repurpose an ice cream container into a scoop so that a JackBord can push a ball and play soccer. We'll also create a field to play on and look at different ways we can make a game of soccer more complicated for our robot.

## What You Need:

1x	JackBord	1x	MK1-DRV Motor Kit
1 x	A4 paper	1x	Ruler (optional)
1x	Scissors	1x	Craft Knife
	Colouring pencils		Cello tape
1x	2x3 JackKano plate	6x	Nuts (not including the ones in the Motor Kit)
1x	2x3 JackKano right angle	6x	6 x Bolts (not including the ones in the Motor Kit)
	Masking tape or chalk	1x	Ball

Note: This activity assumes that you have already attached the MK1-DRV motors and wheels to your JackBord. If you have not done so already, please refer to the **Attaching Drive Motors** guide or **4001-act2**, which are available on [www.JackBord.org](http://www.JackBord.org).

This activity also assumes you are familiar with driving the robot. If not, refer to the **Driving Robot** guide, also available on our website.

## Construction Steps:

1. Using a craft knife, cut the ice cream container in half. **Make sure to be careful while you do this!** This is going to become the JackBord's "foot".



2. Taking the A4 piece of paper, we're going to turn it horizontally. This is because the long side of the paper will fit perfectly inside the ice cream container half. Using your ruler, measure the height of your ice cream container. This is how tall you want your paper to be. Alternatively, you can line up your paper on the inside of the ice cream container and use a pencil to mark the height. After you have done this, cut out your paper strip.
3. Decorate it! Give your robot a team! You could take inspiration from your favourite team (like we did) or create your own. Decorate your strip with your team colours and give your JackBord a face.



Using the rest of the paper, you can create a logo to put on the top of your JackBord which makes it even easier to identify. If you have one, you can trace around a JackBord TOP as it perfectly fits the top of the JackBord and will guide how big your logo should be.

4. The next thing we want to do is attach the ice cream container to the JackBord. Using 2 nuts and bolts each, attach the 2x3 plate and the 2x3 right angle together to create a bracket. This is pictured to the right:
5. Attach the bracket to the JackBord's front wheel, with the right angle facing outwards. This is where we are going to attach the ice cream container.



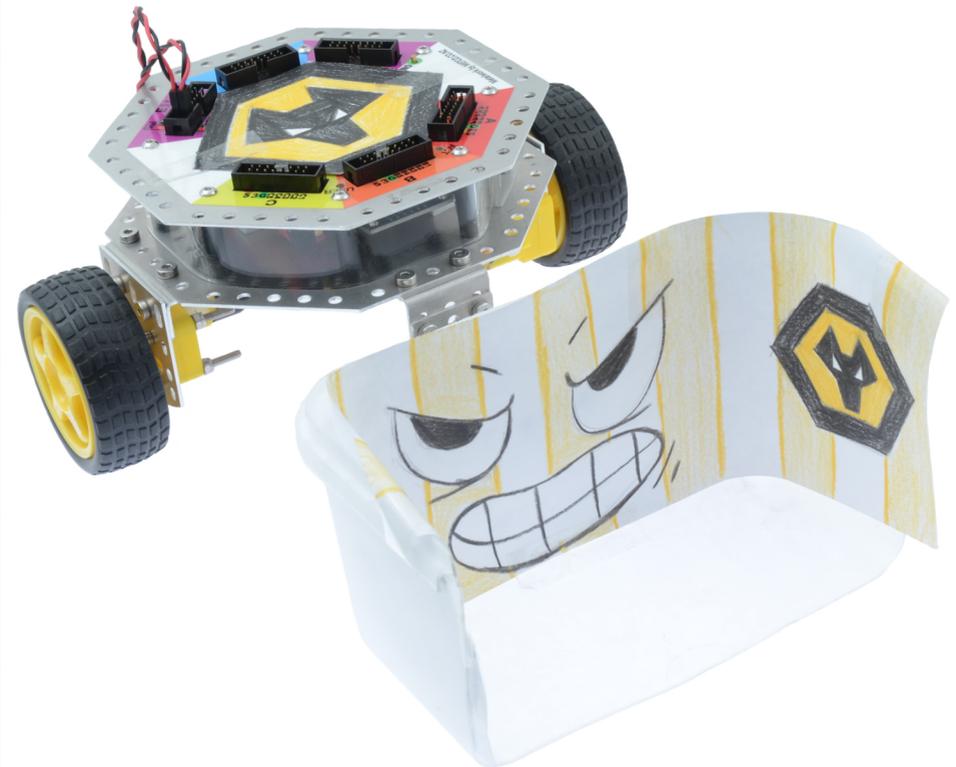
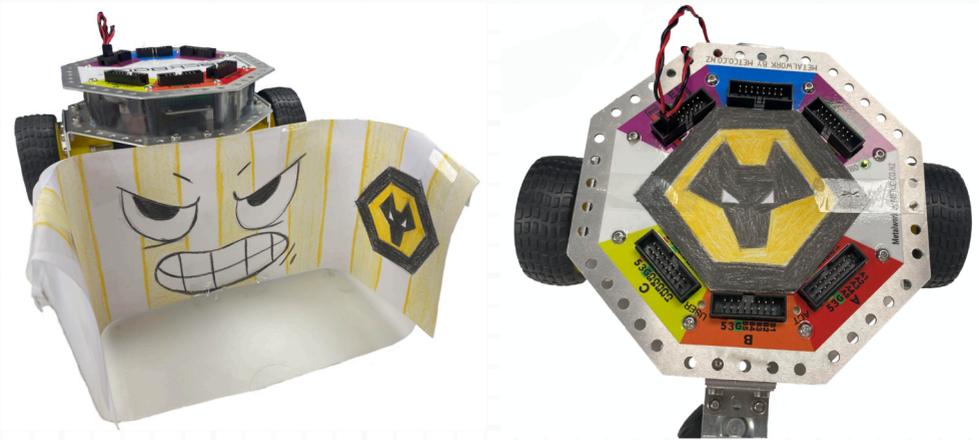
6. Line up the ice cream container with the right angle of the bracket, and mark out where its holes are. Pierce two holes where the markings are, specifically where you are going to put the bolts through. You can do this using scissors or a craft knife, just remember to **be very careful** as it can be quite fiddly!



Once you have made the holes, connect the ice cream container to the bracket using your remaining nuts and bolts. It should look like this:



7. Using cello tape, attach your strip of paper to the inside of the container, and your logo to the top of the JackBord. Now you're done!

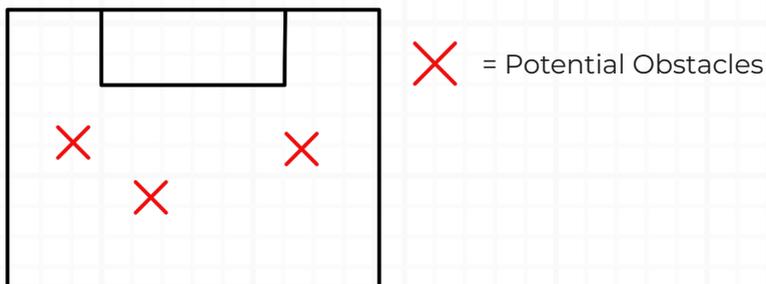


## The Game:

Now it's time to play some soccer!

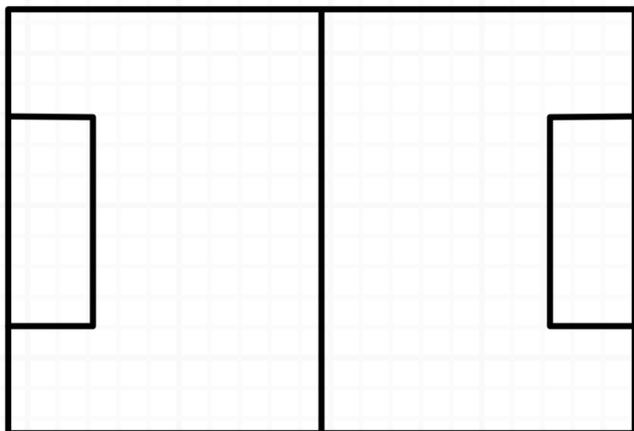
### If you only have one JackBord:

- You can use chalk or masking tape to mark out half a field on the ground. See how many goals you can score in 3 minutes. Each time you score, move the ball to a different start position.
- Set out some cones or other obstacles and see if your robot can dribble a ball around them.



### If you have a friend (or more!) with a JackBord:

- Try playing a game of soccer! Try playing a game of soccer! Mark out a small field on the ground with chalk or tape, making sure that you have a centre line and a goal on either side. If you're not confident in your goal-scoring ability, make the goal wider. If you and your friend are up for a challenge, make the goals smaller.



## Make it More Challenging

Here are some ideas you can use to make your game more challenging:

1. Play and control the JackBord only using the command line
2. Play and control the JackBord only using pre-programmed buttons on the DRIVE page

### Info: DRIVE Buttons

Did you know you can actually program the buttons on the DRIVE page? Each button on the drive page is numbered from 1 to 9, which corresponds to port pins U1 to U9. Use the format **btp u[button number] [command]** to program your buttons before your game! For example, in the pop-up command line, type and enter:

**btp u1 bms 50|dly 500|stop**

Now when you press button 1, either on your dashboard or on your keyboard, your JackBord will move forward a little bit and then stop. To reset all of your buttons, use this command in the CMD line: **rstb**

3. If you have more than one person on a team, try playing with traditional soccer rules. For example, throw-ins, goal kicks, corners, offside, etc.