# micro:bit Basket:bot

Look at the Basket:bot on the table. It is made from different pieces of laser cut wood. Its arms can pivot to throw and catch a basketball. Each arm is powered by a *servo motor*. A servo motor can move to positions that you specify with the micro:bit. The servos we'll use can rotate their arms between 0 and 180 degrees, which is half of a circle.

We'll use code blocks to move the arms and toss the ball. Once you know how to move the servos to the positions you want, it's up to you to figure out a routine to code for your bot.
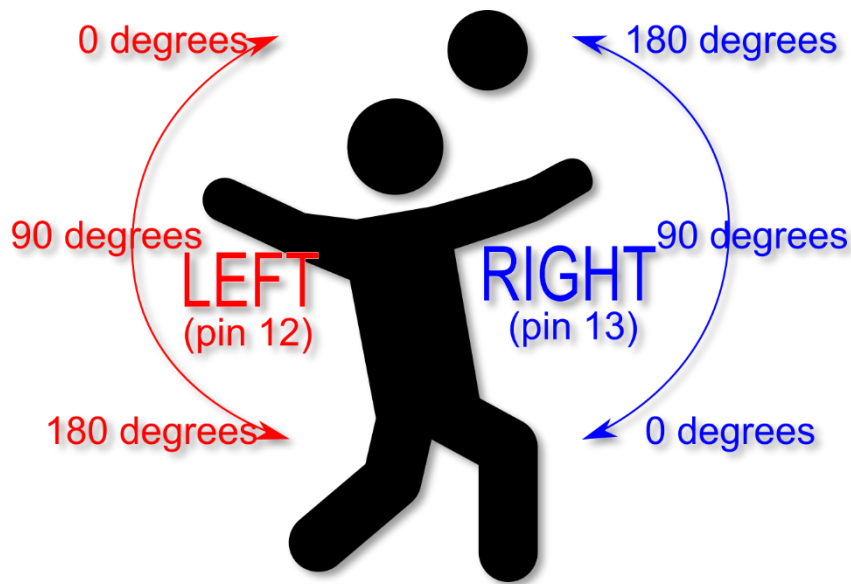
Example Code:

The code blocks to control the servos are on the **Pins** menu. When our program starts, lets send both servos to the middle of their range (90 degrees). The left servo is on **Pin 12**, and the right servo is on **Pin 13**. Their angles are as shown in the picture above (**TBD** image). Set the code blocks in **on start** as shown:

Next add the code below, to make the bot raise and lower its arms when you press the buttons. Button A controls the left arm (**Pin 12**) and B the right arm (**Pin 13**). It is important to include a **pause** block (on the **Basic** menu) after each "write servo" instruction because the servo needs time to move to its new position.

Test out the code. Can you make the bot "throw" the ball back and forth with the micro:bit buttons? Can you add code to make the bot wave to you when you push buttons A and B together?

If you want to have the display show how the ball is going to move left and right, you can add some **plot x y** code blocks from the LED menu and use a **for** loop from the Loops menu to make a pixel move across the screen when the ball flies in the air:

Write your Own Routine:

Now it's up to you to get creative. Can you create a ball-throwing routine for the bot to follow? Maybe make it move its arms when you tilt the micro:bit or when it is noisy or quiet. Use your imagination and be sure to show your instructors how your routine turns out!