

Botball Lesson Plan

Title: Moving the robot with a black line

Concept / Topic to Teach: Driving the robot using the tophat IR sensor.

Standards Addressed:

Goal:

By the end of this activity, students will be able to stop the robot on a black line and have the robot follow a black line.

Anticipatory Set:

This is important because the Botball game boards typically feature black lines of tape, navigating the robot using these lines is easy, reliable, and accurate.

Time Required:

Required Materials: Computer with KISS-C, Demo bot, download cable

Activity Procedure:

1. Open KISS-IDE
 - a. Target: CBCv2
 - b. New Program
2. Watch Video
3. Try it out
 - a. Stopping at a line
 - b. Following a line

Assessment:

Game board simulation (see end of video) Schematic is on page 3.

Students start in the lower left box, turn to face the can, push the can to the long line, follow the line to the box at the end, push the can into the square at the end of the line, and stop the robot.

Extension Activities:

Tape two sheets of paper on the table a set distance from each other, tape a black line between the two sheets. Students must start the robot on the first sheet of paper, and park on the second sheet paper.

Use different course layouts (curves or loops) and smaller targets.

While loop and if statement handout

Boolean expressions

== is equal to

!= is not equal to

> is greater than

< is less than

>= is greater than or equal to

<= is less than or equal to

After the mathematical expression is evaluated, the Boolean will be **true** or **false**

Example

1<=5, (true)

1==5, (false)

While loops

Format:

```
while( Boolean expression){  
    //process this code  
}
```

if the Boolean expression is true, then the following block of code will be evaluated, then loops back to the Boolean expression, if true again, evaluate the block of code, and continue looping until false. Hence the while **loop**.

If the Boolean expression is false, the block of code is skipped.

If statements

Format:

```
if( Boolean expression){  
    //process this code  
}
```

The Boolean condition is only evaluated once, and will not loop.

Else

If you have two if statements, and do not want to have the CBC waste time evaluating the second statement if the first one is true, use else.

Else if

If 3 or more if statements exist, use if, else if, then else.

Else if works like an else, in the sense that it will only be evaluated if the if (or else if) above it was false. However, unlike an else, an else if will also test a condition.