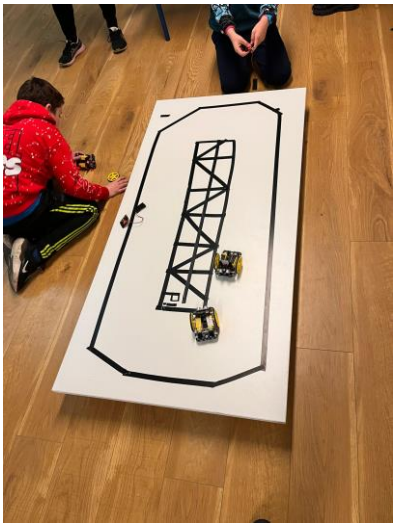


MOVE MOTOR KART RACING PROJECT

Kart Racing project

ABSTRACT

This project uses the 2microbits, move motor and combines the remote control, line detection , LED's logic loops and function.
Phases 1 & 2 are very straight forward with phase 3 add more coding / logic.

Michael McCann

OurKidsCode Bective GFC

Contents

Introduction

"Hey there, future inventors! 🚙🏁 Are you ready for a super cool project? We're going to create a racing track for tiny Karts, and it's going to be awesome! 🏎️

The goal of our project is to make these little Karts zoom around the track like real racers. But guess what? We're turning it into a fun game with three exciting phases!

🚙 Phase 1

Let's Get Rolling! We start by making the Karts move. We'll use two microbits – one to give commands and the other to control the Kart. Kids will learn to make the Kart go forward, backward, left, right, and stop. It's like magic!

💡 Phase 2

Shining Like Stars! We'll add lights to our Karts. When they go forward, green lights will light up in the front. Turning left? A cool yellow light on the left. Going right? Yellow on the right. Going backward? White lights at the back. And when they stop, super bright lights show up!

🏁 Phase 3

Race and Dodge! Here's where the real fun begins! We'll put special lines on the track and give our Karts three lives. Every time they cross a line, they lose a life. Uh-oh! We'll have a little heart to show their lives. They'll need to be clever to avoid losing all of them!

🏁 Race Tracks Galore!

But that's not all! We've got three different tracks to conquer. First, an easy oval track to race around as fast as you can. Then, it's a race against your friends! And finally, the most exciting one – a track with obstacles! You'll have to dodge and race at the same time. Who will be the fastest?

Get ready for an amazing adventure with your microbit Karts! 🏎️🏁 Have a blast, and remember, it's all about having fun and learning as you go. Happy racing!"

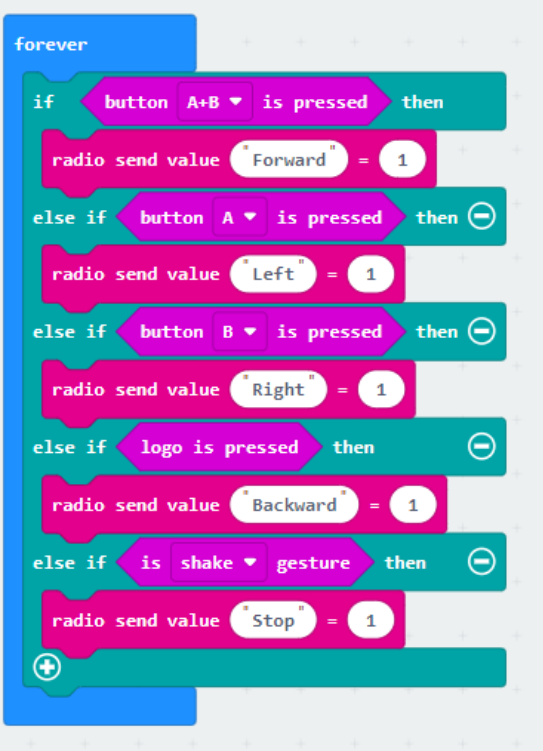
🚗 Project Phase 1

🚙 Phase 1

Let's Get Rolling! We start by making the Karts move. We'll use two microbits – one to give commands and the other to control the Karts. Kids will learn to make the Kart go forward, backward, left, right, and stop. It's like magic!

You will need 2 microbits one a Transmitter and the other a receiver.

Transmitter code



Note:

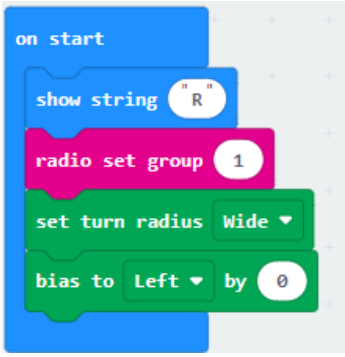
The “T” string is just so you know which Microbit is running the code.

Please change the radio group number to your favourite number between 1-255 if everyone have has the same number will cause problems.

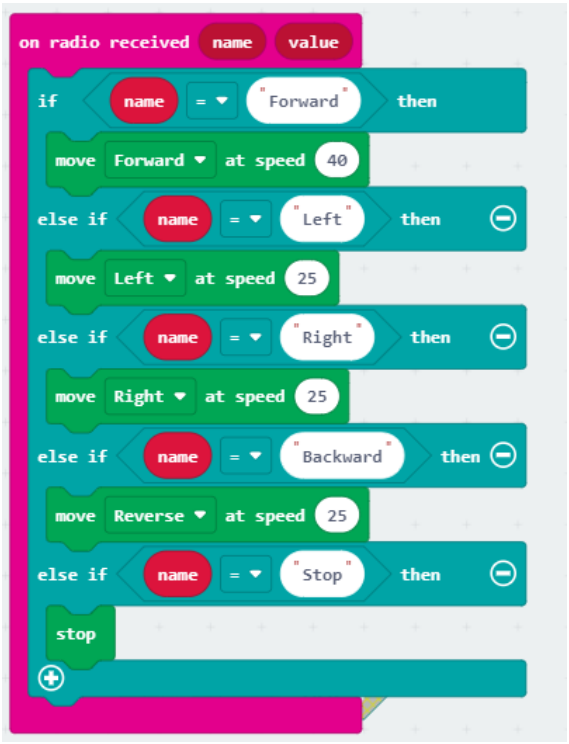
Receiver code

This is the receiver code or the code that goes into the Microbit in the Kart.

- On start set show string to "R" so you know that this is the receiver.
- Radio set group needs to match what you have set on the receiver
- Set Turn radius – this is how sharp you want to make your turn
- Bias to Left- Adjust motor to allow you to go in straight line



- Move Forward Set to Speed 40
- Move Left Set to Speed 25
- Move Right set to Speed 25
- Move backward set to 25
- Stop – Full stop



STOP: Test the code and see if works, note you can adjust the turning and speed as need or when you start getting used to the controls.

Phase 2

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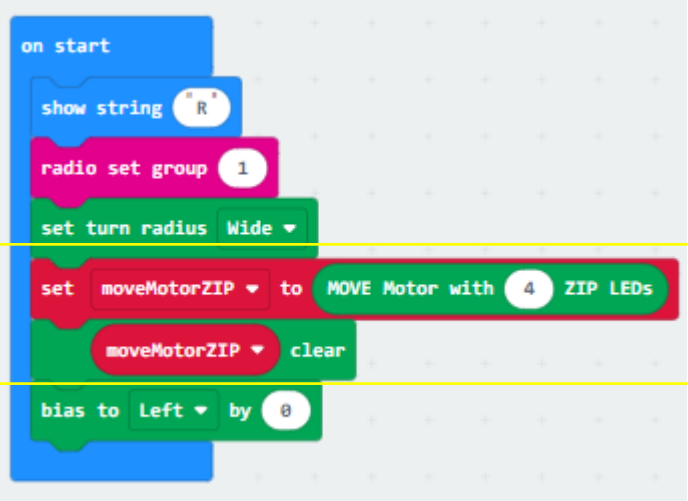
Receiver code

Only the receiver code needs to be updated.

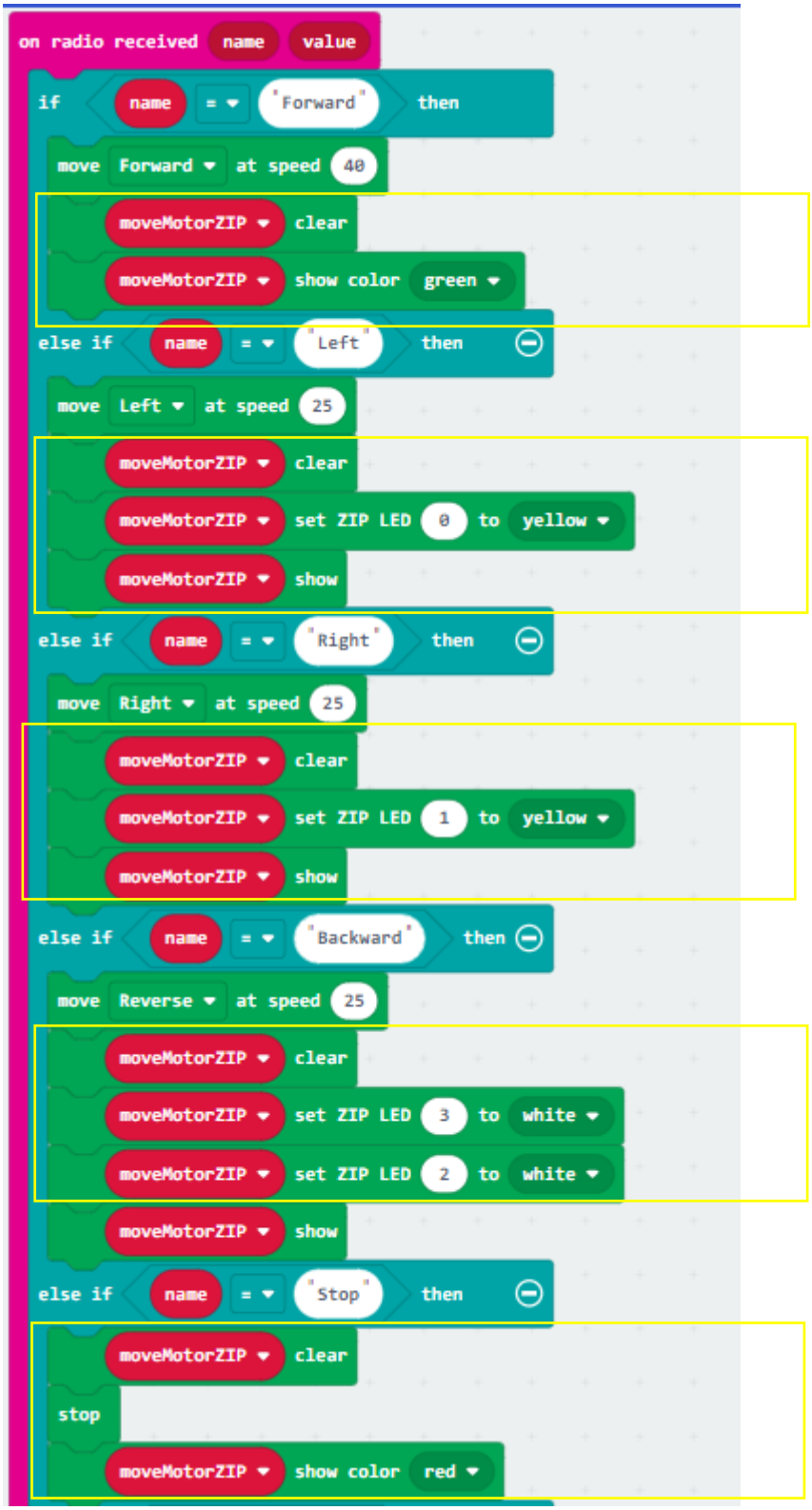


Update On Start you need to initialise the Lights / LED's

- Set moveMotorZip to Move Mortor with 4 Zip Led
- moveMotorZip Clear

STOP: Test the code and see if works, have some fun, test the light , Try it in the dark and see how cool the LED's look, but trying not to crash – remember shake the controller for emergency Full Stop 😊

Update On radio Received to Set Lights/ LED’s base on direction



Phase 3

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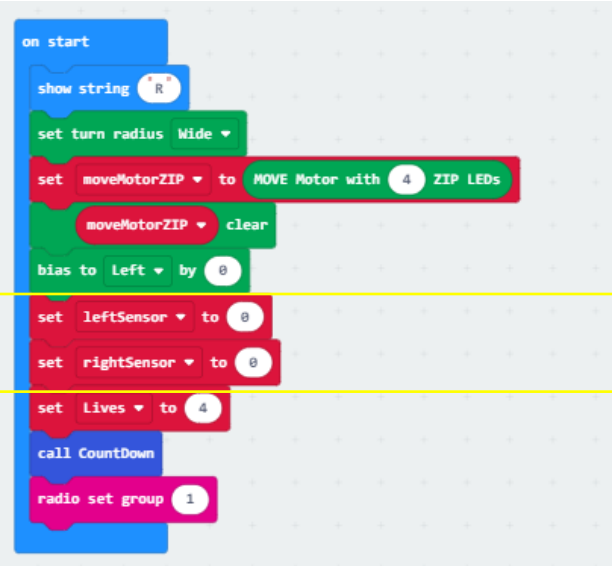
Note you only need to update code on the Kart (receiver)

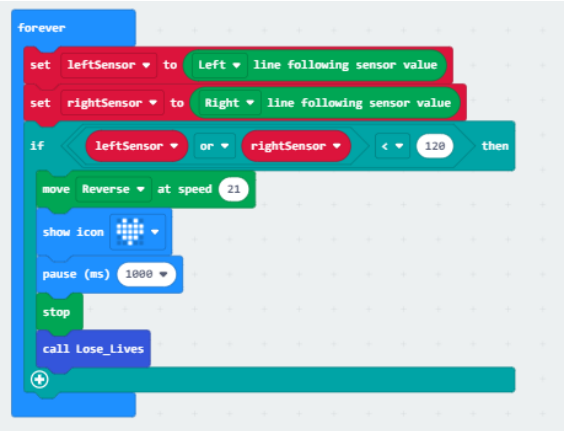
Receiver code

On Start we create 2 variables leftSensor & rightSensor then set to 0



This defines right and left sensor.

This How to detect if you hit a line.



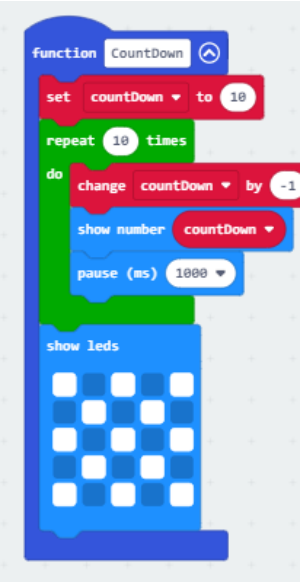
If left or right sensor is Less < 150 you have hit a black line

Lose a life function.

When you call the lose Live function –

- If live Greater that 0 – Show your Lives remaining.
- If you are out of Lives
- Stop the call – change the Radio group to spot the remote control.
- Show lives – play a sound – show Ghost – Call 10 Second count down – then reset lives.
- Show new lives count and set Radio group back to so you can resume control.

Simple Count Down Function

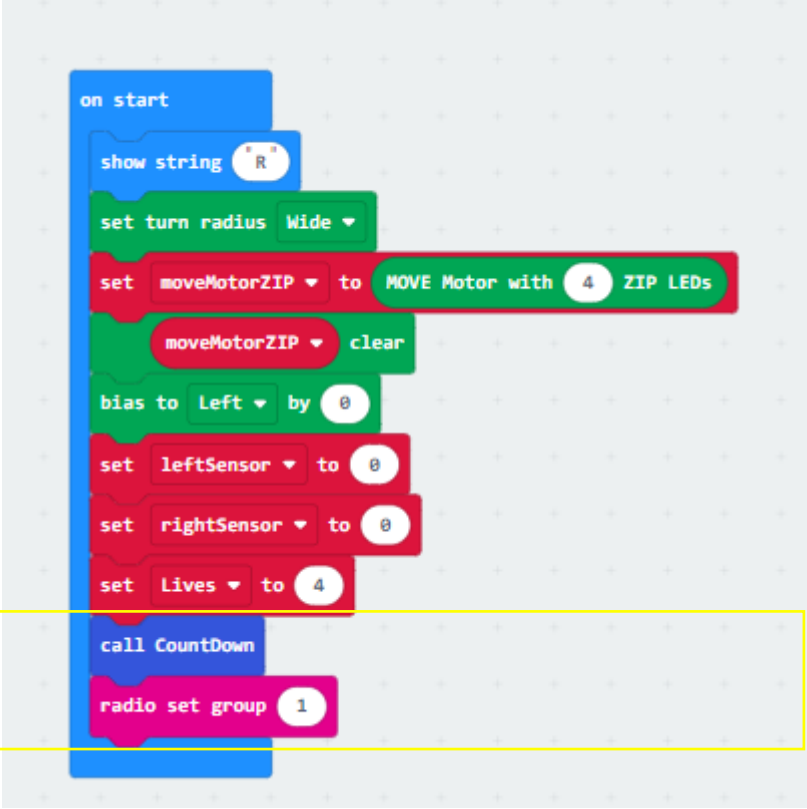


When you call this function is just count down from 10 – we have added to the start to allow time to get the car in place so you do not lose lives before your set.

Also used it as a time out when you have lost all your lives

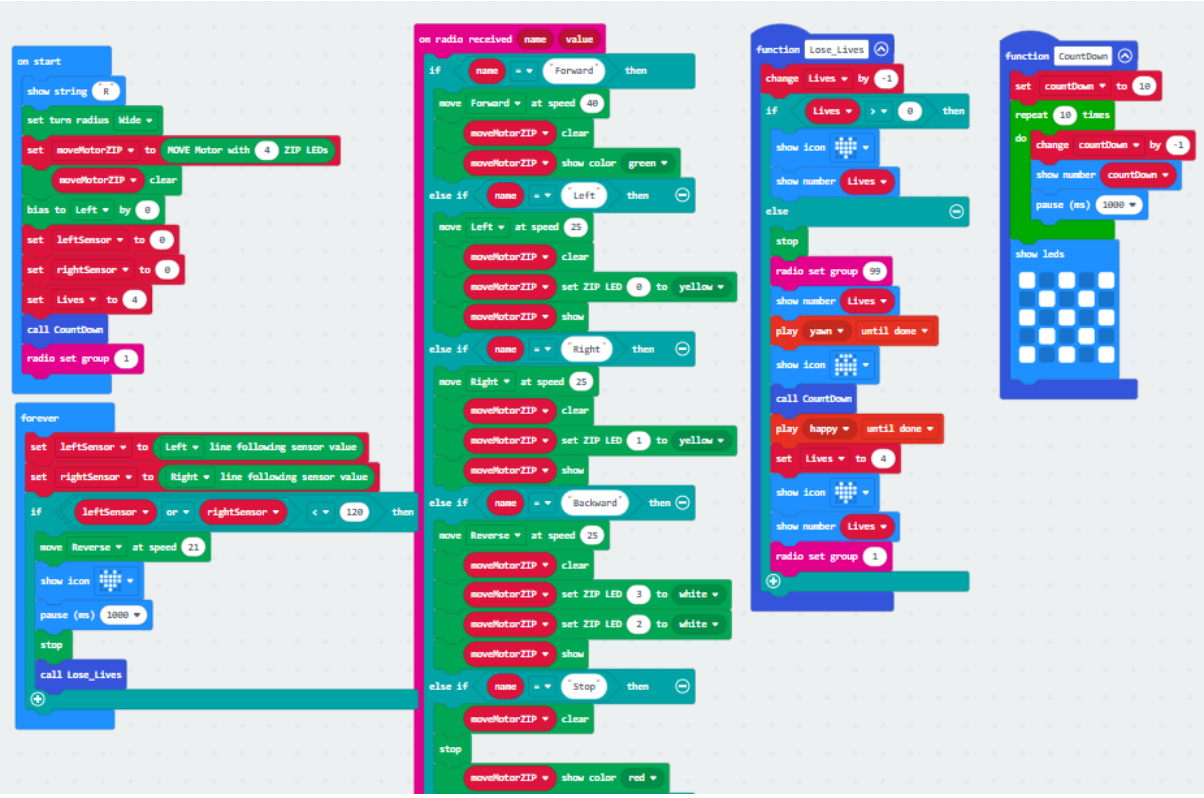
Testing and checks

Check your ON Start – Call the count down first then set the radio group – this is down so you cant start access the controller until after the countdown is completed

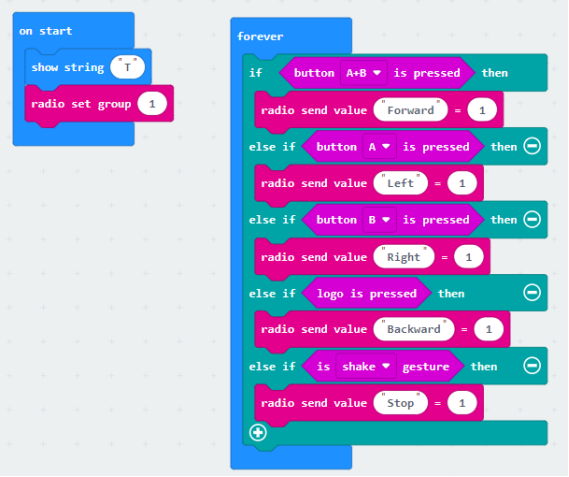


Double check you **change the radio group 1** to your own number in both start up and lose lives functions

Screen shot of all the Kart (receiver code)



Screen shot of all the (Transmitter code)



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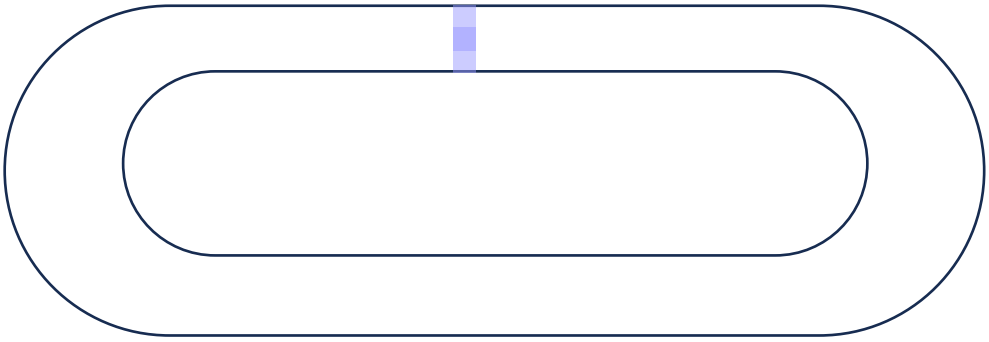
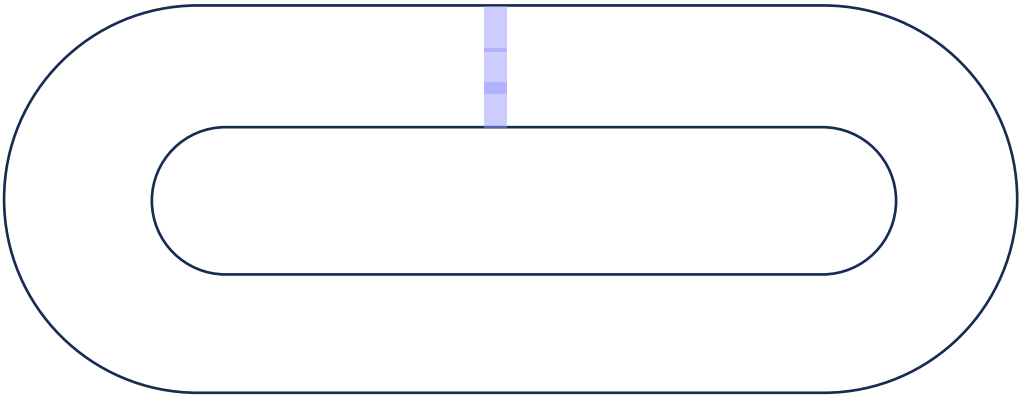
Track 1 - Simple oval

Speed test fastest single Kart to do 3 laps



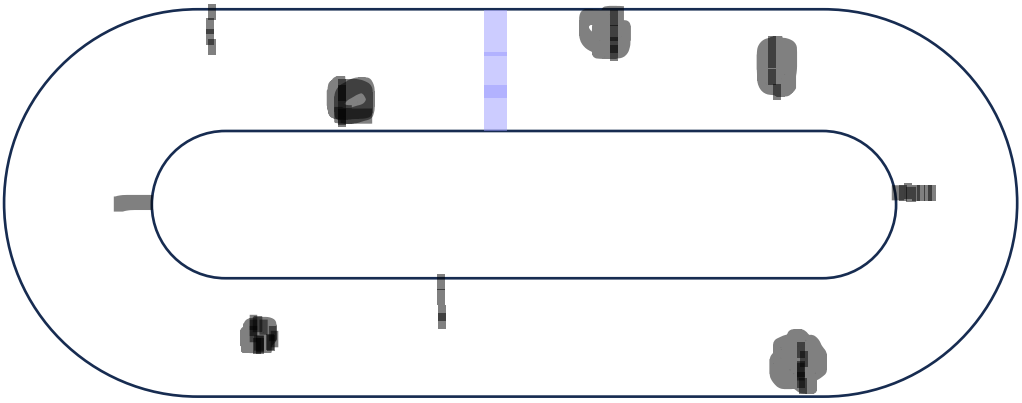
Track 2 – Wide oval track

all Kart race for 3 laps, no Crashing !!!



Track 3 – Wide oval track with lots of obstacles.

All Karts race for 3 laps, Avoid the obstacles !!!



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Enhancement

Connect to you Phone as remote?

Updating code to work with a Kitronik :GAME Controller for micro:bit

Can code it so microbit transmitter so it will work with or without the Game Controller,

Working with the game controller it allows you to add more ACTION controls.

i.e. can add a turbo button and Rumble feedback to the controller etc

why not create your own tracks and add lots of obstacles.