GSIT Quest #1 Solution

By Alaina, Brianna and Sara

We finished Challenge 2 and 3 with our coach at our first meeting but had to attempt Challenge 1 and bonuses without her at our second meeting. She was in Houston with her FIRST Robotics team. We wish we had more time to work on it with her but we tried our bestl



Challenge 1

This was our hardest challenge yet. There was a lot going on - lots of things to keep track of and measure and calculate. This was the challenge our coach gave us a tutorial video for. She explained circumference. We had to calculate how far around one wheel rotation Finch actually travels and we did that using the wheel

> We followed our coaches example here because we were a little confused. We needed to stop after we traveled the total miles. We also needed to convert things to cm instead of miles. moved along a little bit and kept moving as long as we had a full gas tank. We changed our beak and tail color depending on how much gas we had left.

We understand what a function is (one of the blocks really) but were not quite sure what type of function to make and where it should go. If we had more time we think we would have been able to do it better!

```
when 🔁 clicked
micro:bit A Display
Finch A Beak R 0 % G 0 % B 0 %
Finch A Tail all R 0 % G 0 % B 0 %
Finch A ▼ Reset Encoders
set miles ▼ to 214
set fullGasTank ▼ to miles / 2
                                                      size.
set circumference ▼ to (3.142) × (5) (♦)
set cmMilesConversionFactor ▼ to 10
set currentDistanceTraveled ▼ to 0
set numGasTankFilled ▼ to 0
set totalDistanceTraveled ▼ to 0
repeat until ( totalDistanceTraveled ) > miles ()
set currentDistanceTraveled ▼ to
  Finch A ▼ Right ▼ Encoder (rotations) x circumference
  cmMilesConversionFactor
if currentDistanceTraveled < fullGasTank
 Finch A Move Forward 1 cm at 50 %
 if currentDistanceTraveled > (0.8) × fullGasTank ( )
  Finch A Beak R 100 % G 0 % B 0 %
  Gastanklights currentDistanceTraveled fullGasTank
  Finch A Tail all R 100 % G 0 % B 0 %
  else if (currentDistanceTraveled) > (0.2) × (fullGasTank) ( )
  Finch A Beak R 75 % G 40 % B 0 %
  Finch A Tail all R 75 % G 40 % B 0 %
  Finch A Beak R 0 % G 100 % B 0 %
  Finch A Tail all R 0 % G 100 % B 0 %
else
  change numGasTankFilled ▼ by 1
  set totalDistanceTraveled v to
  numGasTankFilled × currentDistanceTraveled
  set currentDistanceTraveled ▼ to 0
 Finch A Reset Encoders
```

Challenge 2

This was the first challenge we attempted and we had a lot of fun with it! It took a little bit but we figured out the timing and made recordings for Finch to talk at each stop on her tour. We used a stopwatch and figured it out. We then had to figure out how long each speech was and add that into our timing for going around.

```
when space ▼ key pressed
reset timer
repeat until (timer) = 53 (>)
 say Finch Left Line
 if Finch Left ▼ Line < 90 ♦
 Finch Wheels L 0 % R 20 %
 else
  Finch Wheels L 20 % R 0 %
 if \langle \text{timer} \rangle > 5 \Leftrightarrow \text{and} \langle \text{timer} \rangle < 7 \Leftrightarrow \langle \text{timer} \rangle
 Finch Stop
  play sound fun v until done
 if (timer > 16 ♠) and (timer < 18 ♠) ♠
 Finch Stop
  play sound MLK ▼ until done
 if (timer) > 34 (♣) and (timer) < 36 (♣) (♣)
 Finch Stop
  play sound art ▼ until done
 if (timer > 44 (→) and (timer < 46 (→) (→)
 Finch Stop
  play sound interesting v until done
Finch Stop
```

Challenge 3

This was the easiest challenge of this quest! We originally only had four move/turn blocks which met the minimum requirements. We had a lot more fun programming Finch to show excitement about taking out the boulder (ping pong ball)!

```
when space ▼ key pressed
Finch Move Forward (60) cm at (50) %
Finch Beak R 100 % G 60 % B 0 %
Finch Tail all V R 100 % G 60 % B 0 %
micro:bit Display
Finch Turn Right 90 ° at 50 %
Finch Move Forward 30 cm at 50 %
Finch Turn Left 360 ° at 50 %
wait 2 secs
Finch Move Backward 8 cm at 50 %
micro:bit Display
epeat 2
Finch Turn Right 360 ° at 50 %
 Finch Beak R 0 % G 100 % B 0 %
Finch Tail all ▼ R 0 % G 100 % B 0 %
wait 2 secs
Finch Beak R 10 % G 0 % B 2 %
 Finch Tail all V R 10 % G 0 % B 2 %
 wait 2 secs
Finch Beak R 60 % G 50 % B 70 %
 Finch Tail all R 60 % G 50 % B 70 %
```

Bonuses

Unfortunately we did not have time to complete any bonuses for this challenge. With a little more time we are confident we would have been able to do them!