Task D

Controlling races using graphs

As the junior coder you will need to control the motion of the characters (buses, cars, and robots etc.) in the game using graphs.

1. Open Investigation 3 Activity 3.3.
   To control a car's motion on the graph, you need to select the car. Click \( \text{EDIT} \) then click on the car's icon to highlight the car.

   This is a graph showing the journey for two cars, Blue Waters and Green Grass. \( \text{EDIT} \) the graph to look exactly like the figure below.

2. By looking at the graph and without playing the simulation, answer these questions.

   A. Predict which car will move faster.
      
   B. How do you know?
      
   C. What is Blue Waters' speed?
      
   D. What is Green Grass' speed?
      
   E. Explain how a car's speed and its line segment on the graph are related to each other.

3. Now play the simulation.

   A. Was your prediction correct? How do you know?
      
   B. Did both cars travel the same distance? How do you know?
      
   C. Did both cars travel for the same amount of time? How do you know?
      
   D. How do you know that Blue Waters is travelling faster than Green Grass by only looking at the graph?

4. Now reveal the Table of Values by clicking on the drop down arrow on the table.

   A. How can you work out the speed of each car from the Table of Values?
      
   B. Were your answers to 2c and 2d correct?
      
   C. How do you know which car won the race by only looking at the Table of Values?
      
5. Sketch a different graph for another race where the other car is faster this time.

6. Refresh Activity 3.3 and then use your own graph to answer questions 2 to 4 again.