

Steam Up 2gether – Lesson 8

Robotics Coding with WhalesBot AI Module 1

Sprocket Concept & Moving Walkway Coding

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Facilitator: Emily Tseng



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A green rounded rectangular button with a white circle containing the number '01' on the left and the text 'Sprocket (Chain Wheel)' in white on the right.

01 Sprocket (Chain Wheel)

A dark green rounded rectangular button with a white circle containing the number '02' on the left and the text 'Build a Moving Walkway' in white on the right.

02 Build a Moving Walkway

A light green rounded rectangular button with a white circle containing the number '03' on the left and the text 'Graphical Coding for Moving Walkway' in white on the right.

03 Graphical Coding for Moving Walkway

A dark green rounded rectangular button with a white circle containing the number '04' on the left and the text 'Scratch Coding for Moving Walkway' in white on the right.

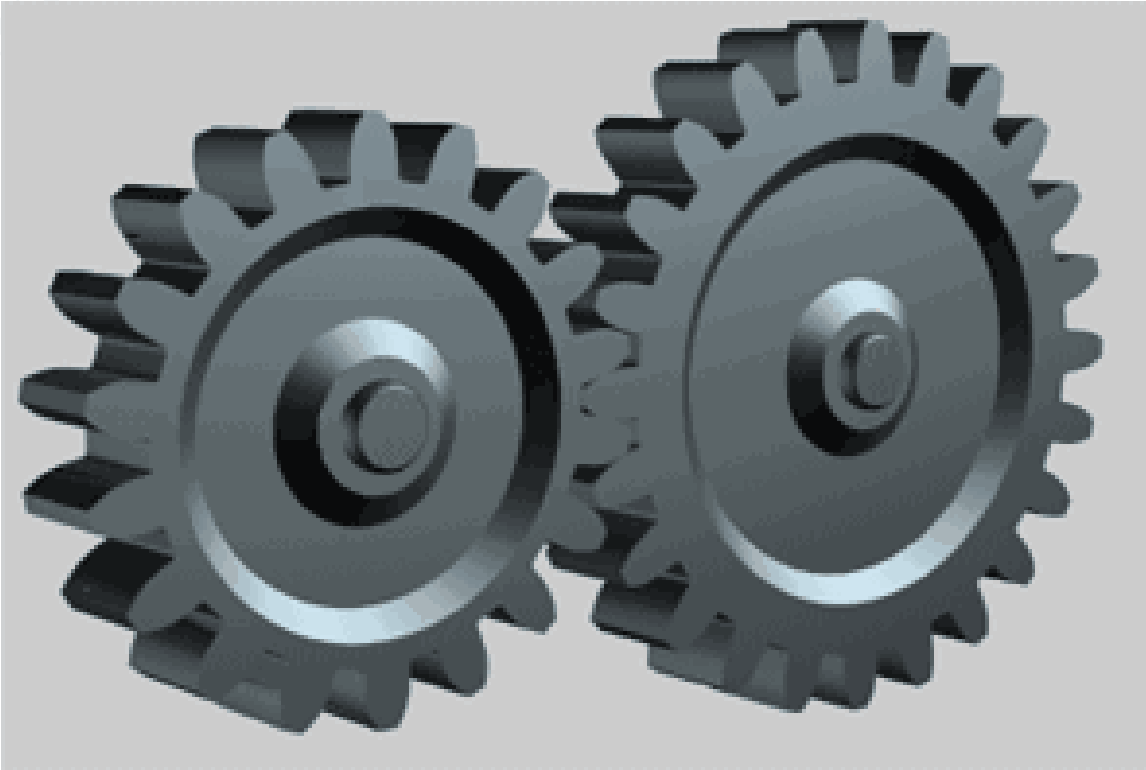
04 Scratch Coding for Moving Walkway



Part 1: Sprocket (Chain Wheel)

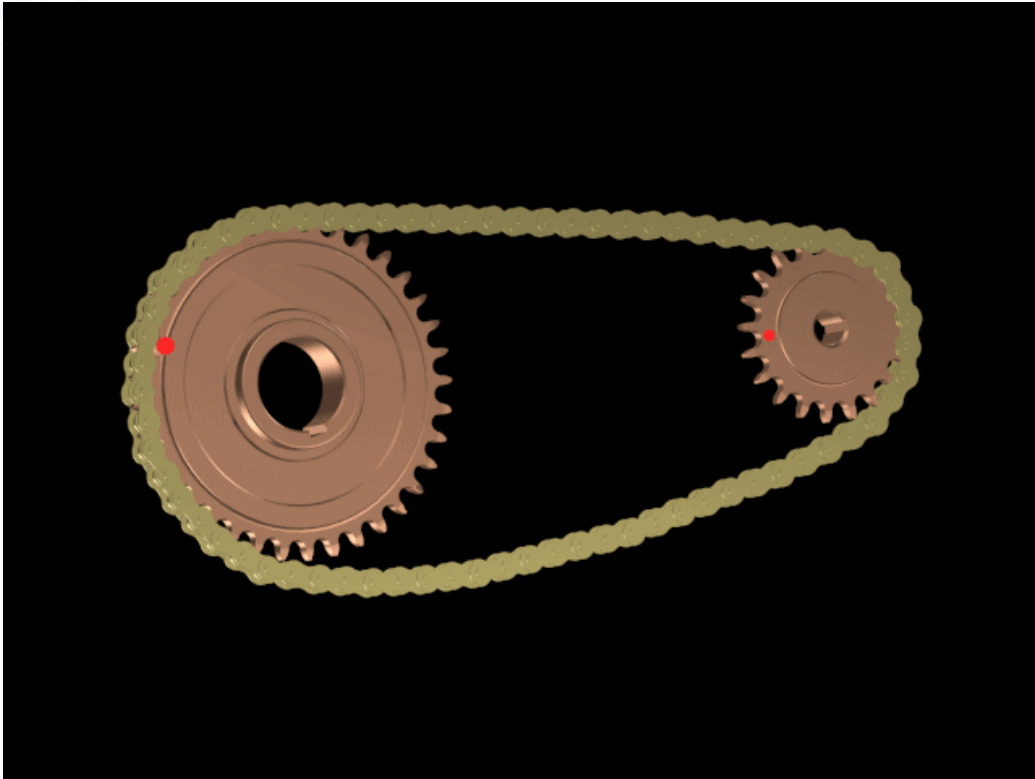


Gear Drive Review



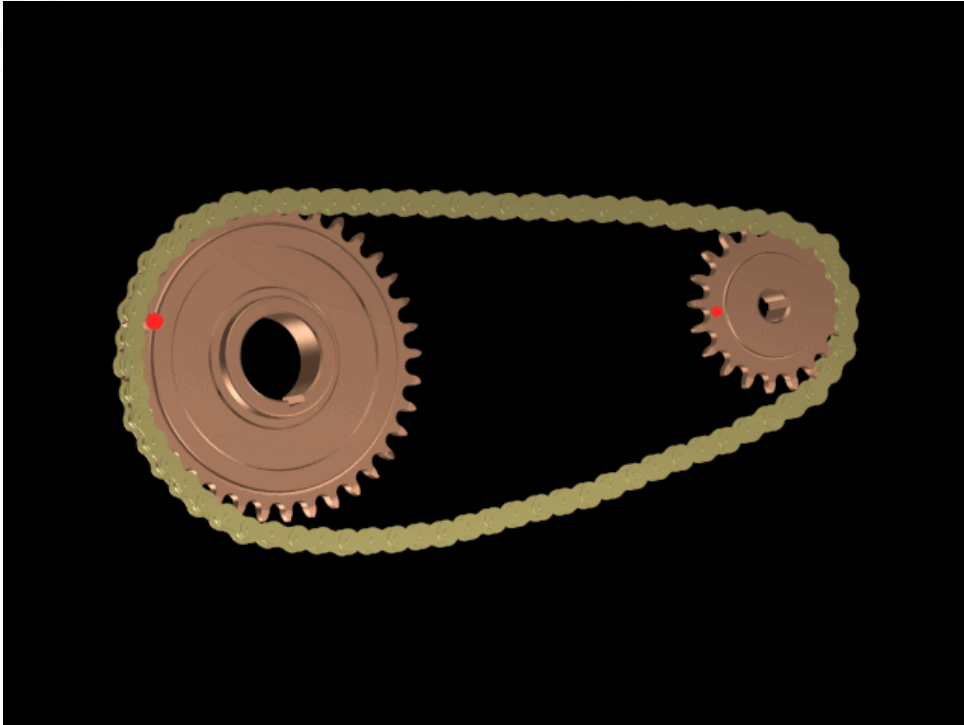
Drive gear and driven gear rotate at opposite directions

Chain Wheels

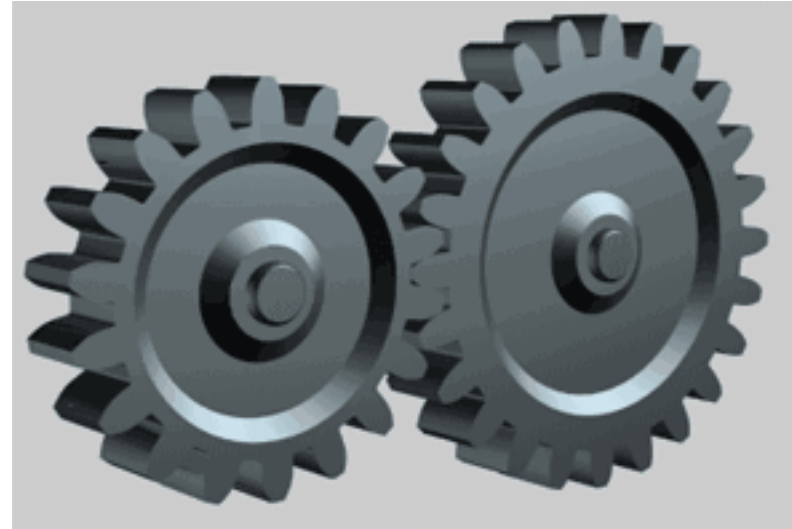


Sprockets, also known as chain wheels, are used in bicycles, motorcycles, cars and other machinery either to transmit rotary motion between two shafts where gears are unsuitable or to impart linear motion to a track, tape etc.

Chain Wheels vs Gear Drive

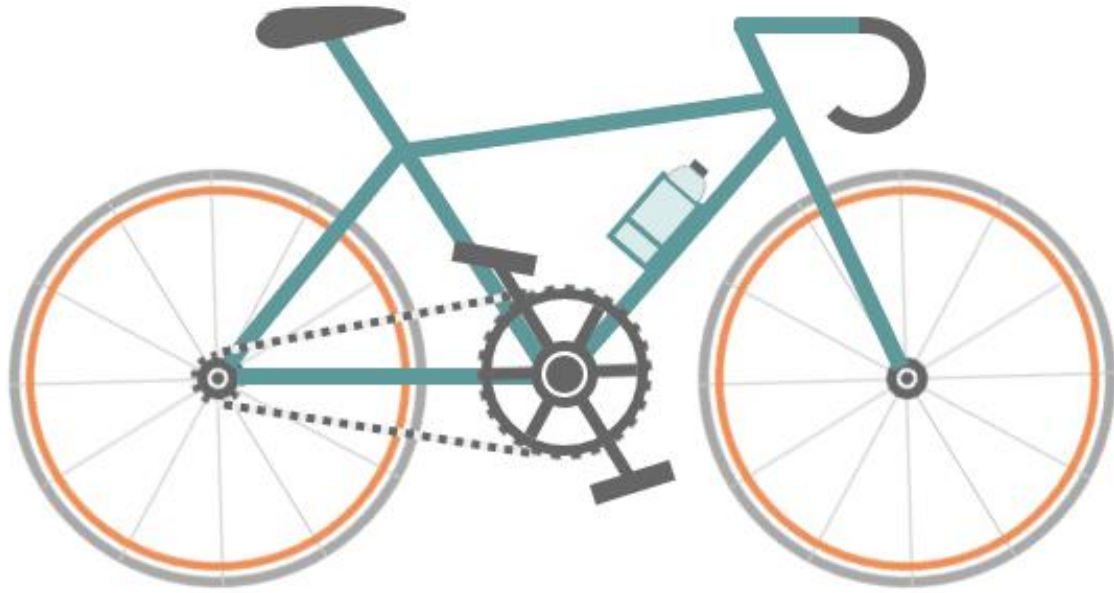


Drive gear and driven gear
rotate at the same direction



Drive gear and driven gear
rotate at opposite directions

Chain Wheels in Bike



Chain Wheels in Autowalk



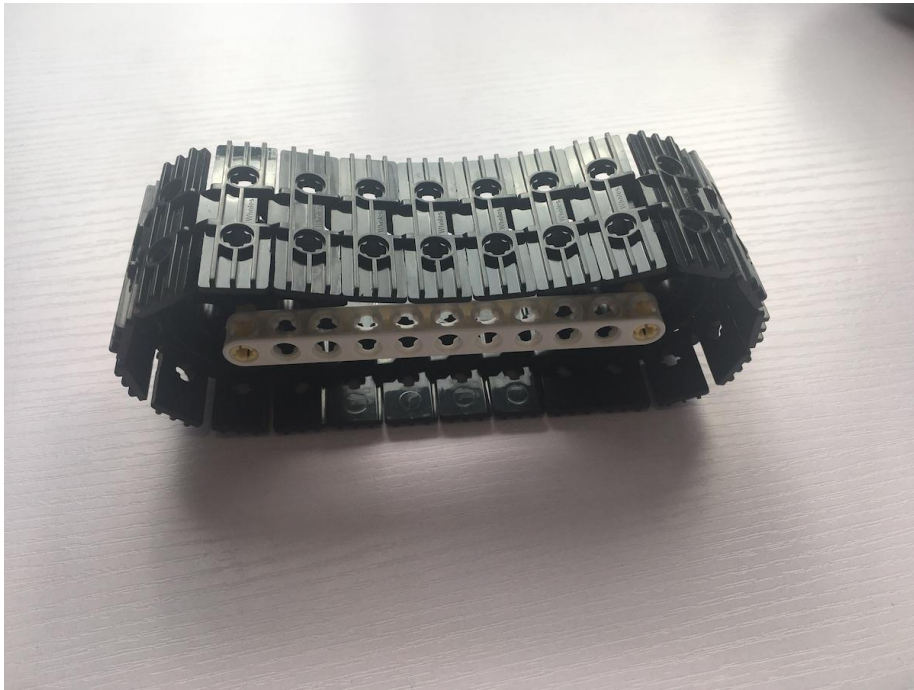
Chain Wheels in Escalator



Chain Wheels in Tank



Live Demo: Build a Chain Wheel



Question 1

Which of the following does not use a sprocket ?

- A. Bicycle
- B. Motorcycle
- C. Computer
- D. Tank

Please complete in Corelab

Question 1- Reference Answer

Which of the following does not use a sprocket ?

- A. Bicycle
- B. Motorcycle
- C. Computer**
- D. Tank



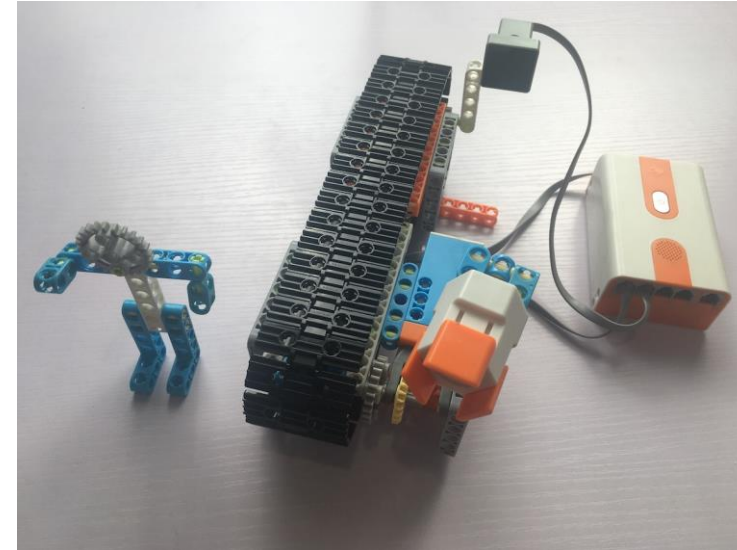
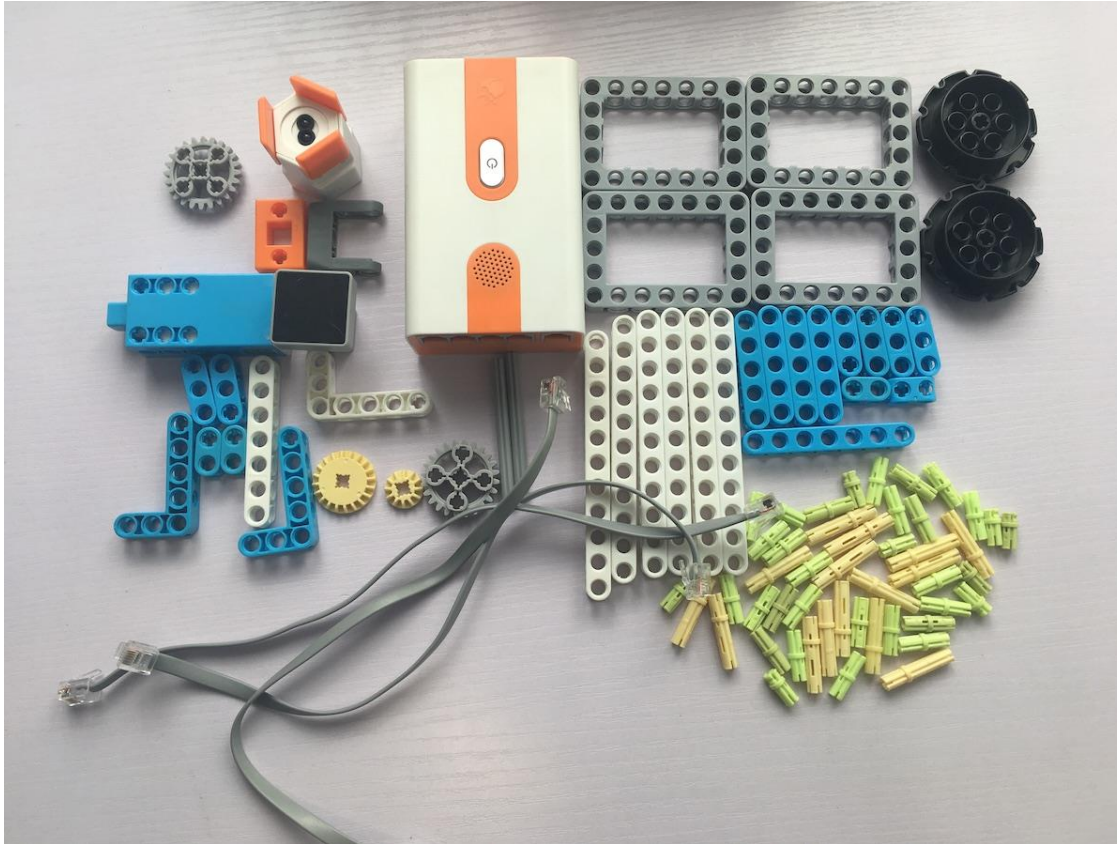
Part 2: Build the Moving Walkway



Moving Walkway @ Airport



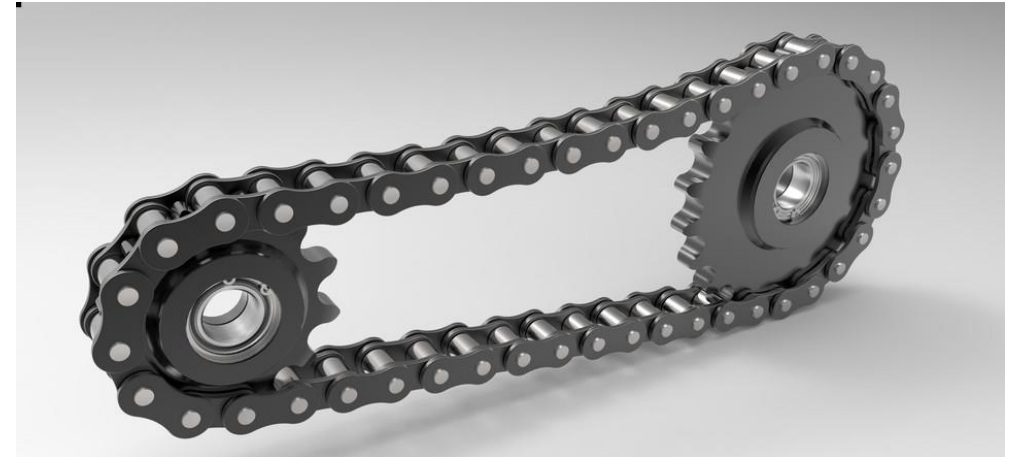
Live Demo: Build a Moving Walkway



Question 2

If the drive gear rotates counter clock-wise, which direction will the driven gear rotate?

- A. Clock-wise
- B. The driven gear will not rotate
- C. Counter clock-wise
- D. All of the above

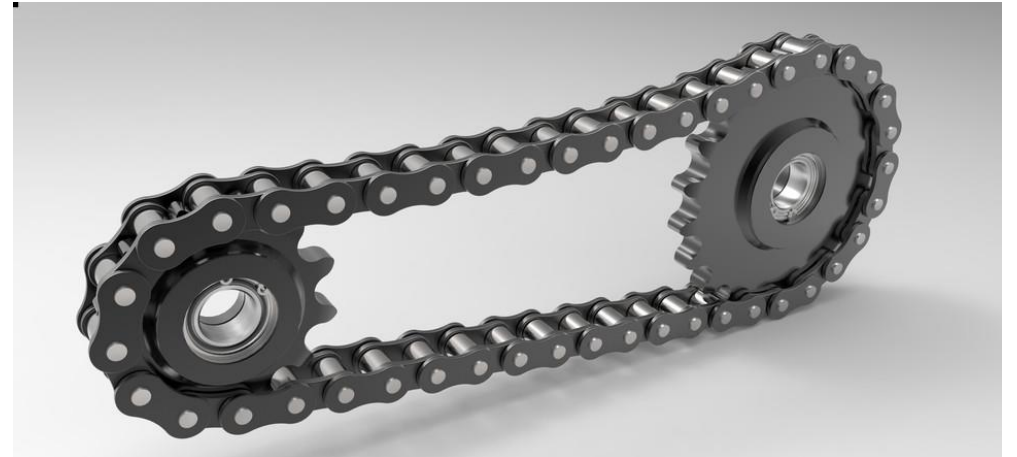


Please complete in Corelab

Question 2- Reference Answer

If the drive gear rotates counter clock-wise, which direction will the driven gear rotate?

- A. Clock-wise
- B. The driven gear will not rotate
- C. Counter clock-wise**
- D. All of the above



Question 3

Which sensor did we use in the moving walkway project?

- A. Touch sensor
- B. Infrared sensor
- C. Grayscale sensor
- D. All of the above

Please complete in Corelab

Question 3 - Reference Answer

Which sensor did we use in the moving walkway project?

- A. Touch sensor
- B. Infrared sensor**
- C. Grayscale sensor
- D. All of the above

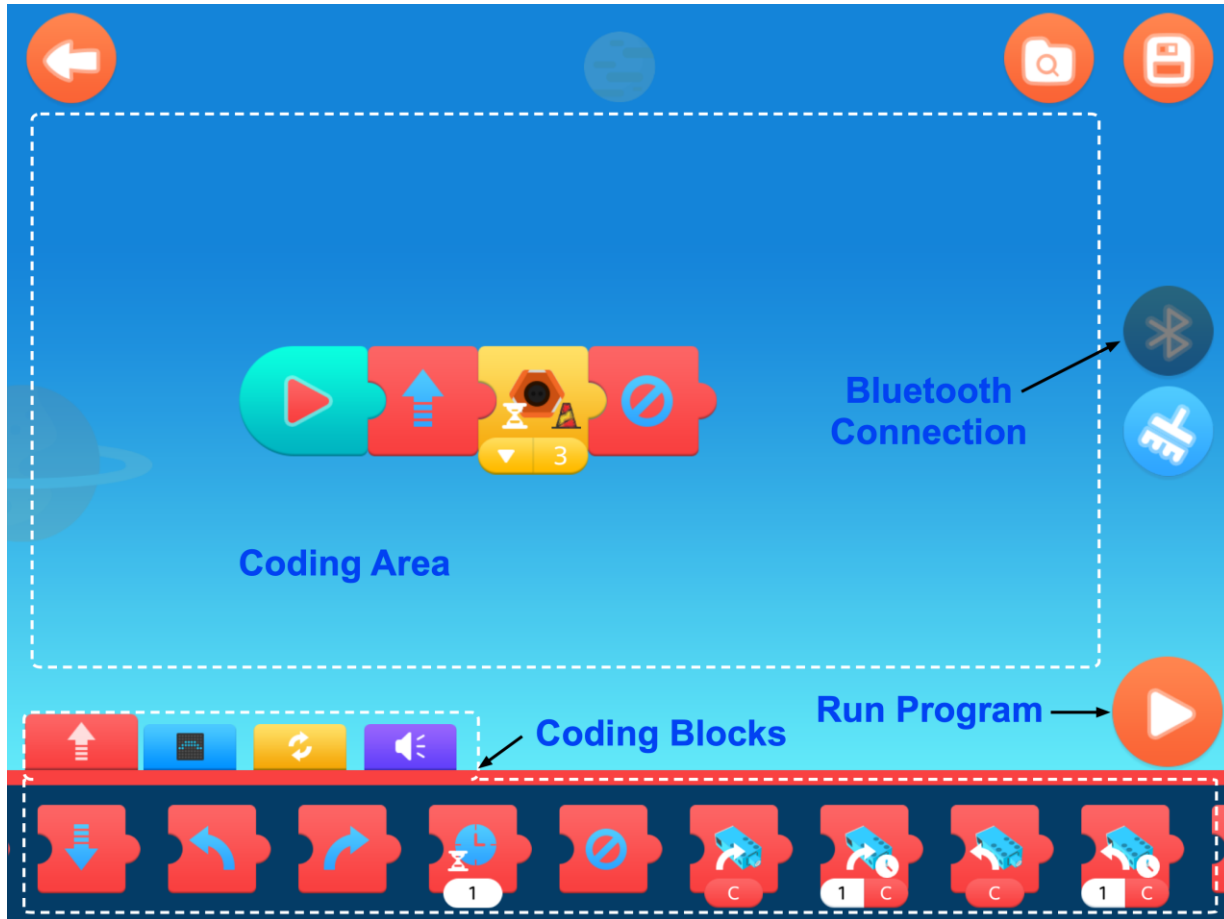




Part 3: Graphical Coding for Moving Walkway



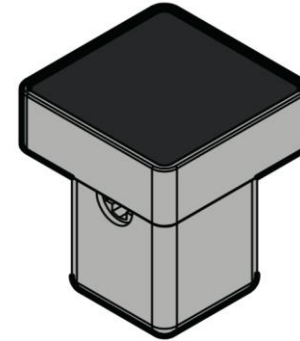
Live Demo: Graphical Coding for Moving Walkway



Question 4

What is the purpose of using emotional screen?

- A. To display "GO"
- B. To play sound
- C. To show moving walkway's emotion
- D. All of the above



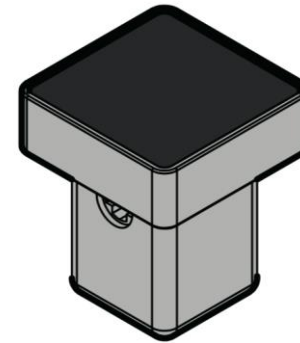
Emotional Screen

Please complete in Corelab

Question 4 - Reference Answer

What is the purpose of using emotional screen?

- A. To display "GO"**
- B. To play sound
- C. To show moving walkway's emotion
- D. All of the above



Emotional Screen

Please complete in Corelab



Part 4: Scratch Coding for Moving Walkway



Live Demo:

Moving Walkway By PC WhalesBot Scratch Coding

The screenshot displays the Scratch coding environment. On the left, the 'Coding Blocks' sidebar is visible, containing categories like Motion, Light Speaker, Sensor, Event, Loop, Logic, Math, Variable, AI, Patrol line, and My Blocks. The main 'Coding Area' contains the following code:

```

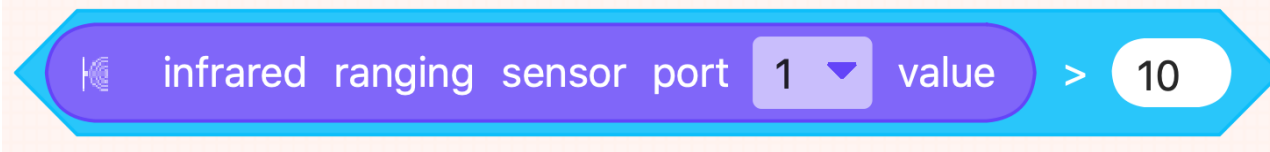
main
repeat forever
  if touch switch 1 pressed then
    set left motor A right motor B Forward power 40 %
  else
    stop left motor A right motor B
  
```

Annotations in the image point to the 'Download' button at the top left, the 'Debug Mode' button at the top right, and the 'Coding Blocks' sidebar at the bottom left.

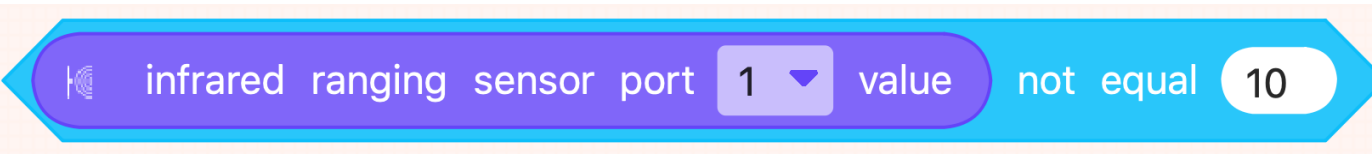
Question 5

Which of the following should be used in order to detect if our hand is close to the infrared sensor?

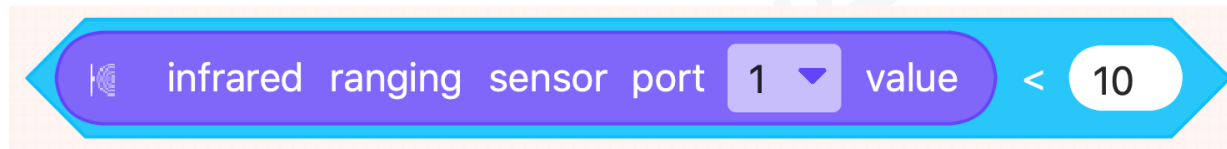
A.



B.



C.



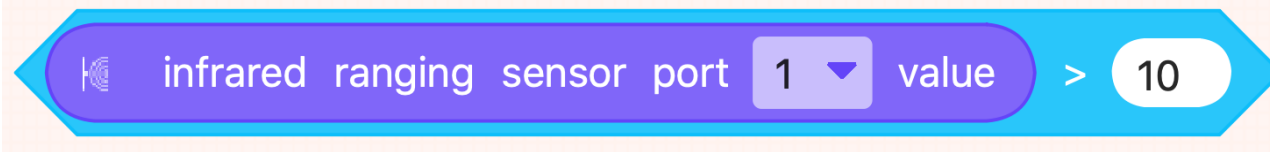
■ D. All of the above

Please complete in Corelab

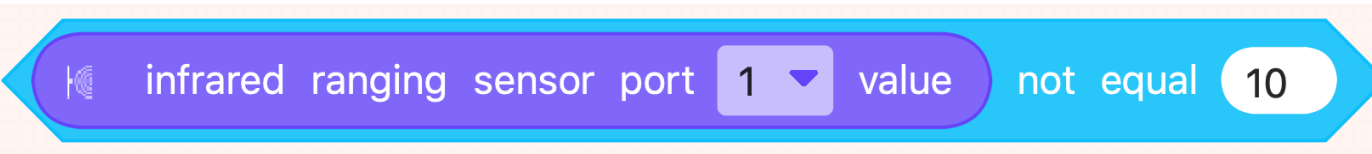
Question 5 - Reference Answer

Which of the following should be used in order to detect if our hand is close to the infrared sensor?

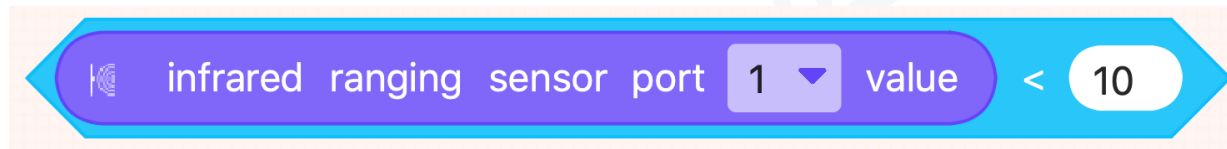
A.



B.



C.



D. All of the above

Week 4 Student of the Week Contest



Topic: Cracking Real-life Problem with Computational Thinking

Project Description

Find a problem that you meet in your daily life, based on what you have learned in Whalesbot robotics coding class, and come up with a solution with Whalesbot coding software.

Project Format

Problem description + Solution with coding software screenshot + Hashtag #STEAMup #Studentoftheweek

Deadline

Aug 10th, 23:59PM (GMT+8)

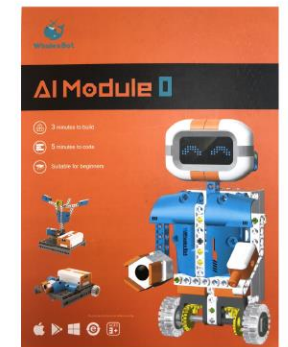
Example Problem:

Hand sanitizer is widely used in school to protect students' health, but students have to press it in order to clean their hands, as covid-19 is still affecting our life, students should avoid touching the hand sanitizer as it will cause infection among students.

Solution:

We can use infrared sensor or ultrasonic sensor with controller, if students put their hands close to the hand sanitizer, the sensor detects it and send the information back to controller, then the motor starts to drive gear, by combing with mechanical structure, the hand sanitizer is then pressed.

Prizes: Whalesbot AI Module 0





Thank You !

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