COMPUTING: PROGRAMMING- Sensing in Physical Computing

Y6

KNOWLEDGE ORGANISER

Overview

Sensing in Physical Computing

--Lego WeDo 2.0 is an App which enables Lego models to be programmed in order to create movements using robotics. This includes sensors which sense when an action is performed on the Lego model. The action will result in a movement or sound.





-We use algorithms (a set of instructions to perform a task) which we can plan, model and test, in order to create accurate and imaginative robotic actions.

- Input- The data which is entered into a computer or device.

Output Device- The device which receives data from a computer or device.

Programming Blocks

-Flow Blocks:



Start Block

Must be used at the beginning of a program string. Press on it to make the program start.



Wait for

Use this to tell the program to wait for something to happen.



Repeat Block

Use this block to repeat actions. Blocks placed inside will be looped.

-Output: Motor Blocks:



Motor This Way Block

Sets the motor to turn the axle in the direction shown.



Motor That Way Block

Sets the motor to turn the axle in the direction shown.



Motor Power Block

Sets the motor power to the desired speed and starts the motor.



Motor On For Block

Starts the motor for a chosen amount of time.

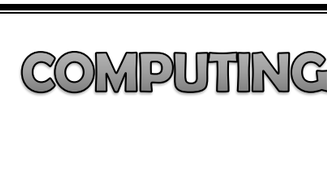


Motor Off Block

Stops any movement of the motor.

Projects Using Sensors

Volcano Alert:



How do scientists use the different stages of volcanic activity to guide their scientific exploration?

You will learn to:

- Explore different ways scientists monitor volcanic activity.
- Create and program an alarm to indicate different stages of volcanic activity.
- Test your program to see how it indicates these at different stages.

Predator and Prey:

Choose from three solutions-



Walk Grab Push

How can animals survive in their environment?

You will learn to:

- Explore the different strategies animals use to catch their prey or to escape from their predators.
- Create and program a predator or prey in order to explore the relationship between them.
- Present and document your animal model, explaining the relationship between two species and how that are adapted to survive.

Inputs:

Sensors Change Input Blocks:



Tilt Up

Inputs the Tilt Sensor mode to "tilt up" to a block.



Shake

Inputs the Tilt Sensor mode to "Shake" to a block.

Numeric and Text Inputs:



Number Input

Inputs a numeric value to a block.



Random Input

Inputs a random number to a block.

Test and Modify:

Try different programs to find out what else you can achieve.

For Volcano Alert, can you program your alarm to emit different signals for each of the three stages of the volcano? As an extra challenge, for each alter, move the drone, the animal, and the rover according to the signal.

Remember to design, test, try and debug your program.



Important Vocabulary

Programming If...then...else...variable Random Direction Navigation Motion Sensor Input Output Motor Alarm Signal