

# Year 6 Computing – Programming: Sensing

## What I should already know

- Programming is when we make and input a set of instructions for computers to follow.
- We can use algorithms to sequence movements, actions and sounds in order to program effective animations.
- We can use selections and conditions to ensure that there are different outcomes depending upon a user's response.

## What I will learn by the end of this unit

- We use algorithms which we can plan, model and test to create accurate and imaginative robotic actions.
- An input is the data which is entered into a computer or device.
- An output device is 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.

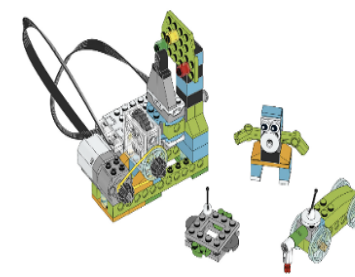


#### Motor Off Block

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.



### Disciplinary Skills

- Design, write and debug programs that accomplish specific goals.
- Solve problems by decomposing them into smaller parts.
- Use sequence, selection and repetition in programs.
- Work with variables.
- Use logical reasoning to explain how simple algorithms work and to detect and correct errors in algorithms and programs.
- Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration.

### Key Vocabulary

programming    variable    random    direction    motion sensor  
navigation    input    output    motor    alarm    signal