

Generation Code

Beginner

**Information for teachers
and group leaders**

Workshop Synopsis

Pupils will have fun getting to grips with computer programming in our interactive coding workshops. In these practical sessions we'll be using the latest child-friendly Raspberry Pi computers and Mirobots to inspire children to get creative with technology. Children will go beyond using screens to use basic coding languages, to control real world objects in fun and unexpected ways.

The Beginner workshop is an introduction to computing and the concept of algorithms; using analogue and digital activities children will explore how to give instructions to computers by creating simple programs to control a robot.

Designed for classes that are just starting computing and is an introduction to the computing curriculum covering the basics.

What will the workshop involve?

Generation Code is an exciting 1 hour interactive workshop that covers key parts of the Primary Computing curriculum, and is designed for students that are just starting on their computing journey. The children will have the opportunity to use a Raspberry Pi computer to program a Mirobot robot. By doing this they explore concept of algorithms and how to write simple programs.

The workshop is led by our expert Enablers and will provide opportunities for children to use equipment and resources they may not otherwise get the chance to.

Is there anything I need to do to prepare the children before the visit?

This 1 hour workshop is designed for classes that are just starting their journey into computing. So no prior knowledge is necessary as the workshop starts from the basics of what an algorithm is and builds on that to start some simple programming.

Risk assessment

- Please visit our website <https://www.eureka.org.uk/education/resources/> to download both the general museum risk assessment and the one for your chosen session.
- We advise you to make a preview visit to carry out your own risk assessment for the overall visit.

Evaluation

Eureka! constantly aims to improve its programmes for school groups and feedback from adults and children is an essential part of this. We value all comments made and will always try our best to act upon them. An evaluation form will be given to you at the end of your session and we ask that you complete and return to us as soon as possible using the pre-paid envelope provided. A copy of the evaluation form is also included in this pack should you wish to complete and return to us via email.

Additional resources & information

The following pages contain various supporting resources and information related to the workshop.

Please find the following documents in this pack:

- **National Curriculum links** – *showing how the workshop fits in with the national curriculum for science.*
- **Equipment Used** – *description and links to the equipment used in the workshop.*
- **Teacher's assessment chart** – *this outlines the aims and objectives of the show, including the key activities which children will be taking part in and their learning outcomes.*
- **Evaluation form** – *a copy of the form which will be handed to you at the end of your session.*

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Primary National Curriculum links

Computing

1. understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
2. create and debug simple programs
3. use logical reasoning to predict the behaviour of simple programs

Maths

1. describe position, direction and movement, including whole, half, quarter and three-quarter turns

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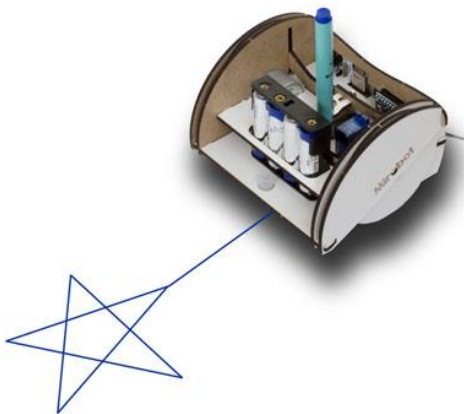
Equipment



Raspberry Pi is a low cost basic computer intended to spur interest in computing for school age children.



pi-topCEED is an exciting and easy way to create a desktop computer using a Raspberry Pi. It's plug and play ready, all you need is a Raspberry Pi, keyboard and mouse.



Mirobot is a drawing robot that's designed to help build children's understanding of everything from engineering to programming and geometry.

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Teacher assessment chart

Aims and objectives – by the end of this workshop children should have learned:

- What an algorithm is and that computers follow these precise and unambiguous instructions.
- How to write a simple algorithm in the real world (as a human crane) and the digital world (navigating a Mirobot)
- To use a simple arrow based interface to control a robot.
- Write a simple program to navigate the Mirobot around the table to specific points.

Overview: Through a series of interactive activities, powerpoint presentation and discussion, this workshop will cover the basics of the computing curriculum, introducing the concept of algorithms.

Activities	Learning Outcomes
Introduction to the session, what is an algorithm?	<i>That an algorithm is a set of instructions that computers use and follow.</i>
Human Crane activity: how to write a set of instructions to complete a task, creating their own algorithm.	<i>How to write a set of clear and unambiguous instructions, and how to follow them. That not being clear or forgetting an instruction means the computer won't be able to complete its task.</i>
Introduction to Mirobots and the arrow interface to control them.	<i>Using knowledge from previous activity, how to put separate instructions together to create a simple program for a robot to follow.</i>
Creating an algorithm to control the Mirobot.	<i>Writing a simple program that makes the robot move as intended. If it doesn't not move as intended then debugging the program to make it work right.</i>
Writing a simple program to navigate the Mirobot around the table to get to the treasure.	<i>Combination of previous activities, writing a simple program that aims to accomplish a specific task.</i>
Plenary for the session.	<i>Recap of the workshop and reinforce the main learning objectives.</i>