Schools Workshops

PATTERN CRAFT

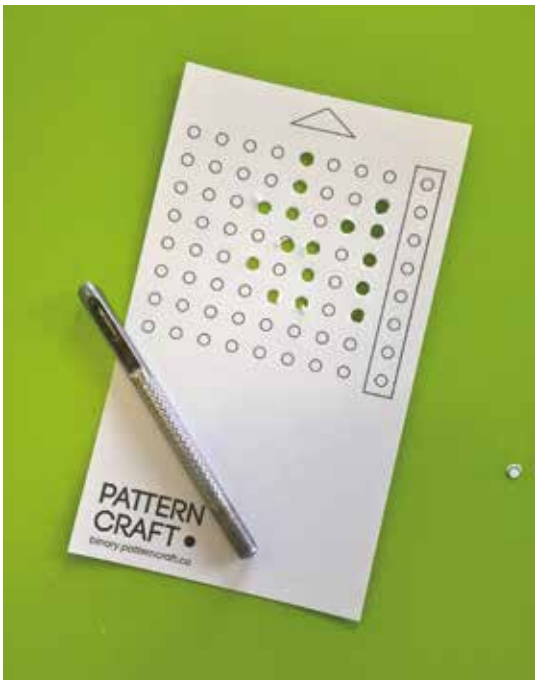
Binary Minecraft Animation

Explore how binary data is used to store images in the form of 0s and 1s and create images in Minecraft using punchcards. Following this introduction pupils will work in groups to design and program an 8x8 2D animation in Minecraft. Older children will have the opportunity to explore the Python coding behind the process and make changes to their animation by editing the code.

Duration:
1.5 Hours

Suitable for:
Key Stages 2 & 3

Class Size:
20-30 students



Encoding Data

Use punchcards to explore how binary is used to store data in the form of 0s and 1. Pupils will be learn how to convert denary numbers to binary and encode and decode numbers using Minecraft builds. The group will then progress to creating messages using the ascii alphabet and use punchcards to make text appear on screen.

Duration:
1 Hour

Suitable for:
Key Stages 2 & 3

Class Size:
20-30 students

To book a workshop or discuss further please contact **gemma@patterncraft.co**

Schools Workshops

PATTERN CRAFT

PatternBeats
Examining the principles of using step sequencers as instructions for playing back music students will use binary to program machines, tempo and sounds in the creation of basic music compositions. Following this the group will be introduced to CSS coding and use it to customise the appearance of the PatternBeats Application.

Duration:
2 Hours

Suitable for:
Key Stage 3 & 4

Class Size:
20-30 students

Programming Turtles
Use punchcards to program a set of instructions for the movements of a Minecraft turtle simulation. Explore how the physical punchcard is representative of a repeatable program that can be looped. Students will then use what they have learnt to predict a sequence of instructions and solve challenges in game.

Duration:
1.5 Hours

Suitable for:
Key Stage 2

Class Size:
20-30 students

PatternCraft & 3D Printing
Use the PatternCraft punchcard reader and Minecraft to build 3D structures one layer at a time. Students will deconstruct 3D models to understand how a 3D printer processes 3D files before printing.

This workshop could be combined with the Minecraft Turtles Session to draw out each individual layer in a series of steps

Duration:
1 Hour

Suitable for:
Key Stages 2 & 3

Class Size:
20-30 students

To book a workshop or discuss further please contact **gemma@patterncraft.co**

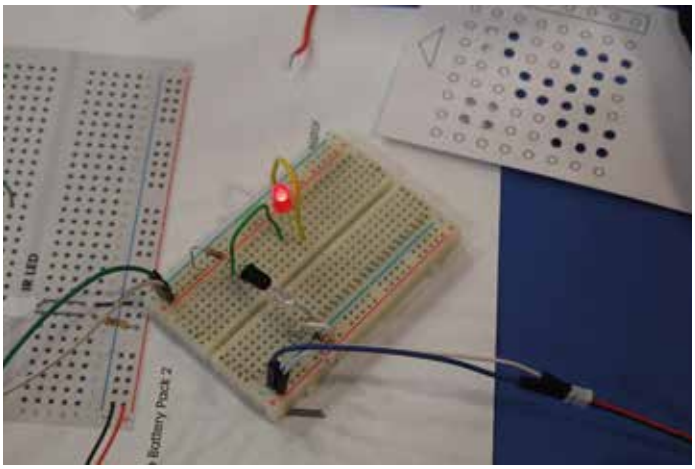
Infrared Detector Circuits

Beginning with an introduction to PatternCraft, each student will make a punchcard see their data translated into a Minecraft build. The group will then explore how the reader works, building infrared detectors using simple components and electronic prototyping boards. Older students can then explore how the voltage signal running through the circuit is interpreted in a 0 or a 1 using the GPIO pins on a raspberry Pi. Students will be encouraged to test the detector using different 'punchcard' materials and varying hole sizes and draw their circuits using recognised symbols.

Duration:
1-1.5 hours
(depending on age group)

Suitable for:
Key Stages 2 & 3

Class Size:
20-30 students



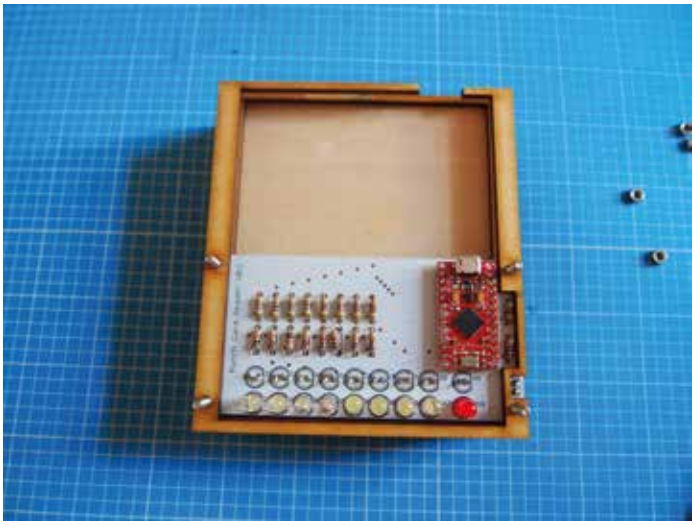
Engineer your own reader

Over a series of weeks pupils learn how the reader works using infrared leds and phototransistors. The group will then be challenged to design and create a housing for the circuits that will allow for cards to be read reliably. This would be best supported with laser cutting and 3d printing where available.

Duration:
1-1.5 Hour

Suitable for:
Key Stages 3 & 4 / STEM club

Class Size:
10-15 students



To book a workshop or discuss further please contact **gemma@patterncraft.co**