

Spirit of Innovation

STEAM Resources



Technology

Year Five

Coding – Scratch Maze Game

An Introduction to Coding - Scratch

Links

Resources

Subject content

- Subject content
- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- Use logical reasoning to explain how some 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
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.
- Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- Recognise common uses of information technology beyond school
- Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies

- Computer
- Internet
- Scratch

Skills

- Working in a team/pair/individual
- Code with increasing independence
- Represent game ideas using Scratch online

Questions

- How are you going to create, organise and display your finding?
- What type of game are you aiming to design? Will it have more than one level?



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- With support, plan and structure a one, or more, level game
- Select specific effects to suit a particular audience
- Select and import graphics from digital cameras, graphics packages and other sources and prepare it for own use (e.g. cropping, resizing and editing)
- Select and import sounds
- Evaluate work both during and after completion, and make suitable improvements
- Debug their game so it is clear and error free

- Why is your Sprite not moving in the way you have planned? What needs changing?
- Are you going to use the Scratch sprites and backgrounds or import your own?
- Will you Sprite change 'costume' when it moves?
- Do you know how to stay safe when on the internet?

Activity

Activity One

Whole Class/pairs
(20 - 30 mins)

Design and programme a Maze Air Speed Record Game using Scratch.

Scratch is designed for ages 8 to 16 and is a free online coding package. Coding using Scratch helps pupils to learn the important strategies for problem solving, designing projects and communicating ideas. Scratch is simple to use as you do not have to type any of the codes. Programs can be built up using ready-made coded blocks. YouTube offer many solutions to resolve any issues that might occur during coding.

Key Words

Sprites – these are the moving objects in a game. They can be people, animals, apples to spaceships!

Scripts – These are the blocks of instructions, that can be dragged into place. Each block joins together like a jigsaw puzzle. Scripts make the sprites move around, change colour, speak and make sounds.

Costume – if you switch costumes on a sprite it will move on the spot like a gif.

Stage – This is where the program action can be seen. Backdrops can be created or uploaded; this backdrop sets the scene for the sprite(s) to move around.

Here are some useful links for Scratch beginners:

<https://scratch.mit.edu/projects/editor/?tutorial=all>

<https://www.youtube.com/watch?v=thbgMU5oo-U>

<https://www.youtube.com/watch?v=VIpmkeqJhmQ>

To begin pick and program your sprite. Sprites can be chosen from a menu or uploaded from own file. Sprites can be programmed to move on the spot. It is called **switch costume**. Eg Scratch the cat will move its legs.



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Use the Green flag and red hexagon to stop and start your sprite moving and/or stop and start the game.



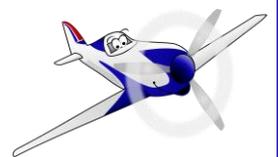
Next the sprite has to be able to move around the stage, using the arrow keys. **If on edge bounce** is included because it will keep the sprite on the stage.

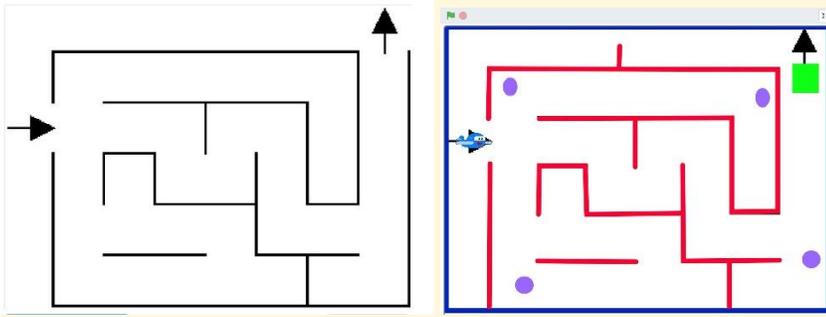


Once the sprite is moving; a backdrop can be added. This can be drawn, chosen from the scratch menu or uploaded from a computer file. Using the line tool, a maze can easily be created. Start/finish arrows can be added and shapes can also be included for *hazards*.



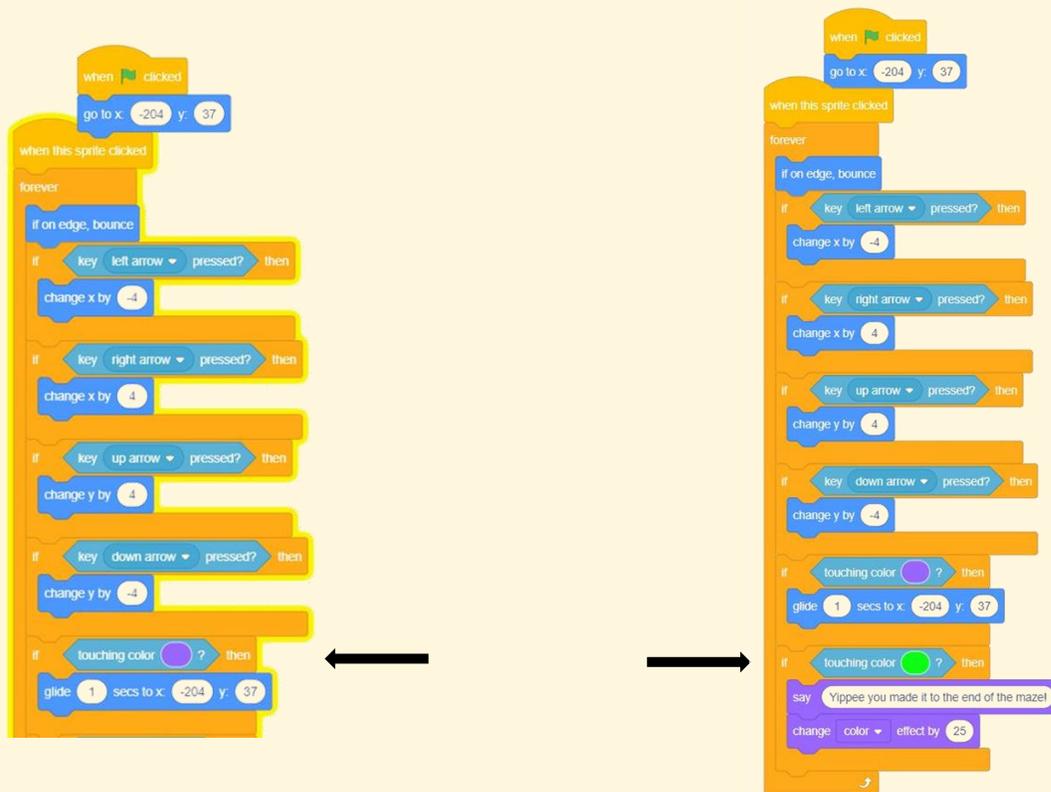
PIONEERS OF POWER





Using the **touching colour** block, you can create *hazards* that will happen to the sprite if it touches that particular colour. E.g. return to the start, flash and change colour, disappear.

This touching colour block could also be used when the sprite reaches the end, maybe taking the sprite to another level of the game.



Obviously, this is a very simple game. Other pupils may want to take their knowledge and skills further.

** If the words **Spirit of Innovation** is used in the saving process others, pupils from other schools will be able to play the games and take ideas from them.*



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