Computing Science Glossary

Sequence One thing following another in which the order may or may not be important.

Parsons Code is provided but not connected for pupils to connect

PRIMM A strategy that promotes Predicting, Running, Investigating and Modifying code before Making something.

Algorithm Part of planning stage before programming written for another human to read.

Code Written for a digital device

USE MODIFY MAKE A strategy that promotes using and modifying code before creation

Loop An event or pattern of events repeated

Completion
Something is missing that needs adding

Dog Chase

Questions & Answers

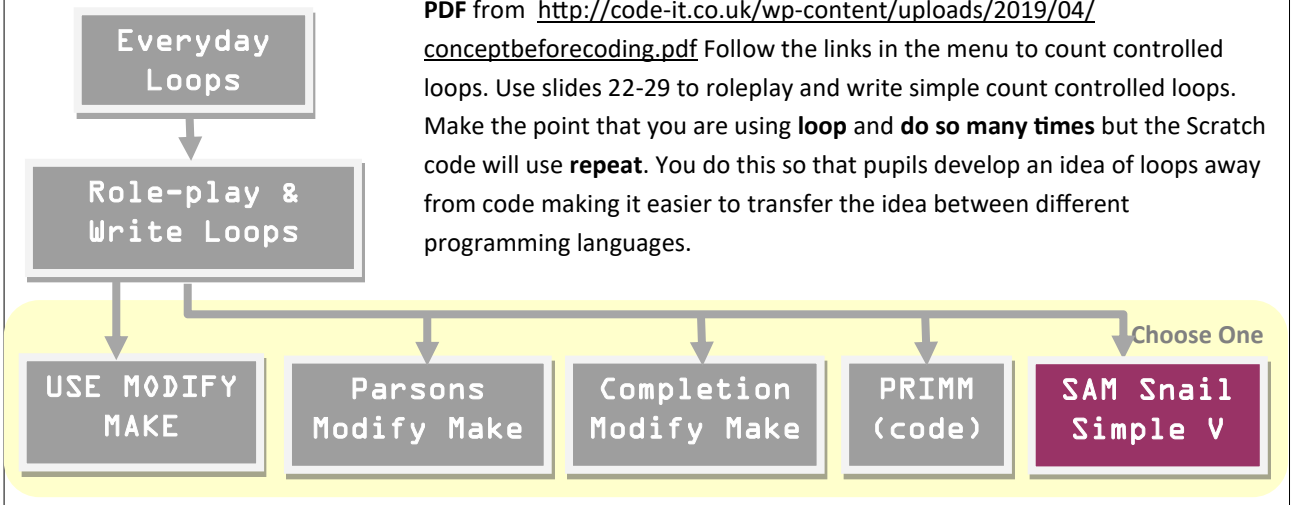
How does this fit in with other app programming? See overview document **What age is this for?** Lower KS2 but a useful start to help pupils explore how count controlled loops work. **How hard is this to teach?** Very easy as all the code instructions are in the booklets. **How do we Assess learning?** Pupils use answers provided to mark their own work. **Is it in line with NC?** Yes see next page. **Why is there a choice?** All of the methods chosen have good research behind them but we don't know which are best or even if there is a best for all pupils. We do know that it helps pupils to encounter a variety of different types of method so they are continually challenged. If you work your way through all modules I recommend you switch strategies each time to keep the challenge high. **How creative is this?** This combines the best knowledge we have about how to learn something new with the opportunity at the end for pupils to create something that they want to create that uses their new knowledge.

Everyday Loops

Download **Everyday computing concepts PDF** from http://code-it.co.uk/wp-content/uploads/2019/04/everydaycomputingconcepts.pdf Use slides 11-14 (everyday repetition) to introduce the idea of loops in our everyday lives. By linking the concept to its everyday use you are linking to known knowledge which means pupils are more likely to assimilate the idea.

Role-play & write Loops

Download Concepts before coding PDF from http://code-it.co.uk/wp-content/uploads/2019/04/conceptbeforecoding.pdf Follow the links in the menu to count controlled loops. Use slides 22-29 to roleplay and write simple count controlled loops. Make the point that you are using **loop** and **do so many times** but the Scratch code will use **repeat**. You do this so that pupils develop an idea of loops away from code making it easier to transfer the idea between different programming languages.



Booklet Choices

Sam snail is an alternative version for pupils who struggle with reading and need a shorter introduction.

You choose from one of the options above. Each option has its own booklet which guides pupils through the stages, making them think deeply about either the code or the algorithm before modifying it and having a choice of things to make. Pupils are instructed when to work in pairs and when to work alone. Cut up the answer sheet (last page of the booklet) into sections as pupils will need to mark their work as part of their learning process. If you are not sure which to choose download the booklets and look at the differences.

National Curriculum Programs of Study

(bold text is covered in this module)

Pupils should be taught to:

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

Before the module

Read the planning and download the PDFs for everyday loops and role-play and write loops. Decide which booklet variation you are going to use and download and print it out one per pupil. Remove the answer sheets for pupils and strim them into sections for pupils to access when they need to. Download the code for your version of Scratch 2 or 3 and place it on your network where pupils can access it, or note where it is on the Scratch website if using Scratch online

Formative assessment support

Asking pupils to read code or algorithm out loud also helps if pupils are struggling to predict, investigate or modify.

If pupils are struggling to work together in a meaningful way then encouraging and rewarding positive attitudes to working collaboratively using the communicates stickers shown at the end helps.

Lots of misconceptions can be solved by reading the code or algorithm slowly and out loud to their partner.

Classroom Organisation

In some sections pupils are asked to work with a partner of similar programming ability. If you are not sure what programming ability they are go with Maths skills as a starting place. Move partners around between modules so that pupils benefit from different interactions.

Assessment

Get pupils to mark their booklets, collect in all the marks by sections. Collect the marks from the modify section and calculate a mean average for the whole class. Email or Tweet this to phil.bagge@code-it.me or @baggiepr stating clearly what age, module and version your class did. For example

Y5 9-10 Years old Diving Beetle PRIMM Algorithm Mean average 5.2/9 for 32 pupils.

Resources

Everyday Loops
PDF Download Slides 3-8 (10 mins)

Role-play & Write Loops
PDF Download Slides 4-9 (10 mins)

Parsons Modify Make
Pupil booklets
Scratch 2 & 3 Code to download
Scratch 3 code on Scratch website

Modified PRIMM Algorithm & Code
Pupil booklets
Scratch 2 & 3 Code to download
Scratch 3 code on Scratch website

USE MODIFY MAKE
Pupil booklets
Scratch 2 & 3 Code to download
Scratch 3 code on Scratch website

All Resources at
http://code-it.co.uk/goldapps/

Further Research Reading

Use Modify Create

Irene Lee et al Computational thinking for Youth in practice (2011)

PRIMM Sentence

https://blogs.kcl.ac.uk/cser/2017/09/01/primm-a-structured-approach-to-teaching-programming/

Four levels of abstraction

This article includes an example of the four levels of abstraction and sign posts the work of Waite and Armoni

http://code-it.co.uk/algprogdiff/

Inspired by Behaviour Rubric created with @MarkDorling and linked at http://code-it.co.uk/attitudes/