Variables & Numbers

Computing Science Glossary

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

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

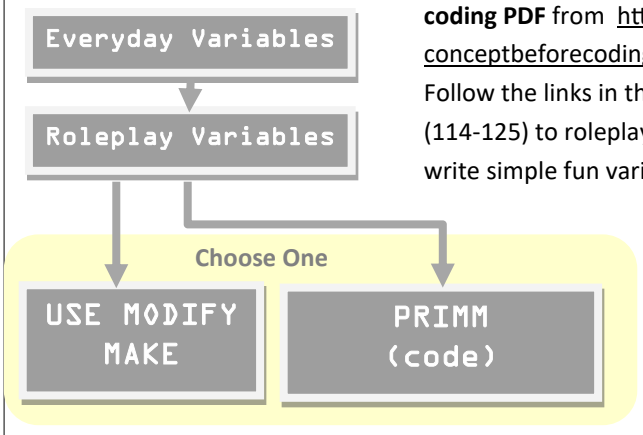
USE MODIFY CREATE A strategy that promotes using and modifying code before creation

Variable A method of storing values that can be used multiple times.

Each variable has a name and a value. When you read the name you act on the value.

Text and numbers can be assigned to variables.

NOTE There is a Scratch version with procedures and one without. The procedures version doesn't use parameters but does nest procedures.



Walker One

Questions & Answers

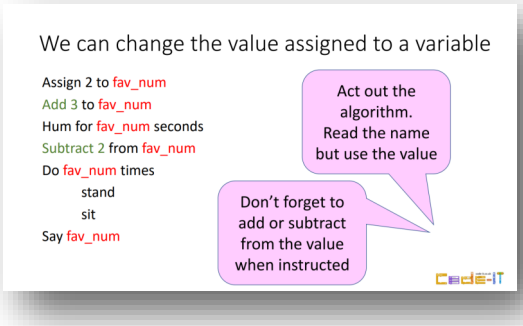
How does this fit in with other game programming? See overview document
What age is this for? Upper KS2 or lower KS3.
How hard is this to teach? Very easy as all the code and question are in the booklets. You may have to work with pairs who struggle with reading.
How do we Assess learning? Pupils use answers provided to mark their own work.
Is it in line with NC? Yes see next page.
Why is there a choice? There are lots of ways of teaching programming and no one really knows which are best or better or even if there is a best or better for all. 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 lots of gold 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 Variables

Download **Everyday computing concepts PDF** from http://code-it.co.uk/wp-content/uploads/2019/04/everydaycomputingconcepts.pdf Use slides 25-32 to introduce the idea of variables 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 variables

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 variables like whiteboards. Use those slides (114-125) to roleplay and write simple fun variables.



Booklet Choices

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. Seperate the answer sheets (last page s of the booklet with more green text) into sections as pupils will need to mark their work as part of their learning process.

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 and go through the PPTs for variables. 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 place them somewhere pupils can 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 helps pupils who 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. More support is coming in future planning editions.

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

You can get pupils to mark their booklets giving one mark for each correct answer. More summative support is coming in later editions.

Resources

Everyday Variables
PDF Download Slides
(10 mins)

Role-play & Write Variables
PDF Download Slides
(20 mins)

PRIMM 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/goldshape/

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/

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