From Scratch to Patch: a "hands-on" workshop

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Abstract: A significant consequence of the widespread adoption of block-based languages such as Scratch as a means of introducing young learners to computer programming, coupled with the fact that "real world" programming is generally performed via textual languages, is that educators are increasingly forced to address the question of how one may best facilitate the transition. This workshop will give participants the opportunity for hands-on experience with Patch, an extensively modified version of Scratch which addresses this issue and which is based upon professional practical classroom experience gained through teaching Computing to children aged 6 to 13 in the UK using both Scratch and Python over the last 3 years. Participants will be supplied with a copy of Patch and invited to explore its features through a number of programs and discuss the argued pedagogical benefits of the modifications with the author.

Contents and practical implementation: A beta copy of the latest version of Patch will be made available to workshop participants, as well as several short programs which demonstrate its features (some of which are outlined below). Participants will be invited to explore these and discuss their pedagogical rationale.
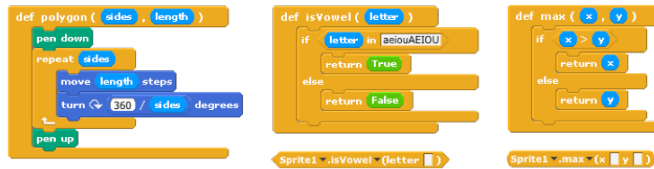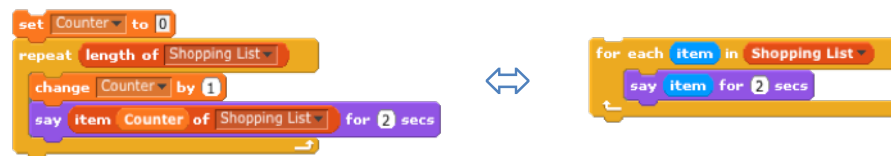
True single-step tracing / debugging
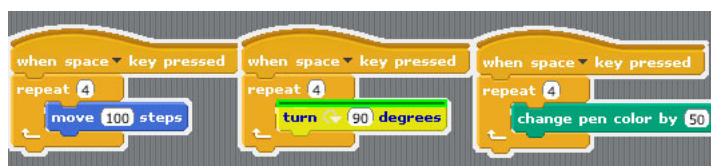
User-editable (type-in) pseudocode blocks
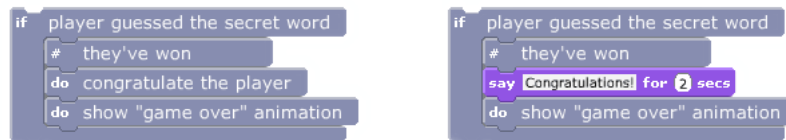
User-defined functions supporting return values, Python-like invocation syntax

Python-like iteration blocks & list operation syntax, emphasis of block indentation

Local / scoped variables indicating 'undefined' status where appropriate

Resources:

Participants are asked to bring their own laptop. Patch is a 32-bit cross-platform application based on Squeak, and a download link for the software will be supplied.

About the author:

The author and developer is a UK Computing teacher responsible for UK Curriculum Key Stages 1, 2 and 3 (i.e. primary and middle school) age groups, and is currently studying for the MA in Computing in Education at King's College, London. Patch was developed by the author as a result of discussions on that course with Dr Sue Sentance, and draws upon the author's own practical experience in the classroom of the issues surrounding the learning of computational thinking, particularly those aspects which pupils find most challenging as they move from blocks-based to textual programming. Patch runs on Windows, OSX and Linux and was originally developed in early 2016, based upon MIT's original Scratch 1.4 codebase. It has now been ported by the author to the most recent Squeak VM as a modification of the extensively redesigned and optimised version of Scratch created by Tim Rowledge for the Raspberry Pi Foundation.