

The

Modulator

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Calling All Grammas & Grampas

A New Challenge

Like most of us of a grand age, my electronics background is analog and hollow state at that. But unless you live in a cave, you've come across multiple opportunities to add digital projects to your station. All of these are controlled by code written in one language or another, and many projects offer the builder the chance to modify that code to suit their vision.

Microprocessors, software defined radios, Arduino—what's an analog ham to do Mike? Mike Cullen, K1NPT, has been very active with local schools and has seen multiple digital initiatives in schools underway. Mike answered my query by suggesting that I jump into the Scratch training for educators that's running in Newport County.

Scratch

Scratch, developed by MIT, is a graphical language that introduces kids to programming without a lot of barriers in the way. Here's the way Bob Beatty, WB4SON, puts it:

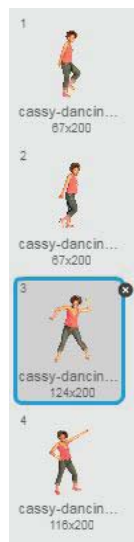
Scratch uses shapes that kids link together to form simple code. For example, a loop instruction looks like a letter 'C' that encloses other instruction shapes that are then looped when run. The overall effect is that 'Scratchers' are using

Boolean operators and learning the structure of coding without the additional burden of a complex syntax that makes learning more traditional languages challenging.



A simple Scratch program

The dark tan block starts the program and the light tan block loops it endlessly. "Costumes" refers to shapes, either drawn or inserted, in this case photos of Cassy, that the Scratcher has loaded. When run, Cassy dances on a screen that is part of the Scratch display.



The real fun begins when Scratch code is sent to an external microprocessor allowing all kinds of real time actions to take place.

You can explore Scratch on your own at the MIT web site without cost or obligation.

<https://scratch.mit.edu/>

On the Scratch Web site

The opening screen shows several introductions to Scratch. You can poke around anywhere, but try this first: Near top left is a purple bubble marked *See Examples*. Click this and then the top left example, *Dance Party*. Now click the green flag in the center of the animation screen and you'll see the result of the code and costumes shown here.

While the sketch is running, click the *See Inside* button at the top right of the screen. You're looking at the *Scripts* screen where blocks are assembled and some of the many other blocks that are available. Look toward the top of the *Scripts* screen and you'll see a tab labeled *Costumes*. Click this while the sketch continues to run and you'll see how the code is making the photos dance.

Writing a Scratch sketch uses the same think-ahead resourcefulness of playing chess, but in a form that kids really get into. I'm working with a fifth grader to develop a frog that lives both on screen and in a plush animal that contains a Micro:bit microprocessor—great fun!

A web search for Scratch Tutorial will turn up many "How tos" along with many *You Tube* examples.