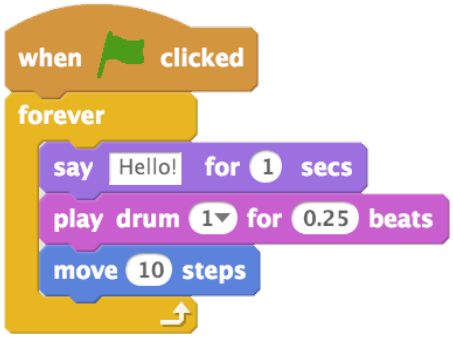
CREATING WITH SCRATCH

People have access to an incredible variety of interactive games, stories, animations, simulations, and other types of **dynamic, interactive media** on their computers today. But, for the most part, these programs are a one-way street: you can only browse and click what others have created; you can't design and create your own.

Scratch changes that, broadening the range of what you can design and create on the computer, making it easier to combine graphics, photos, music, and sound into **interactive creations**. With Scratch, you can create characters that dance, sing, and interact with one another. Or create images that whirl, spin, and animate in response to movements of the mouse. Or integrate images with sound effects and music clips to create an interactive birthday card for a friend, or an interactive report for school.

The name **Scratch** comes from the **scratching** technique used by hip-hop disc jockeys, who spin vinyl records back and forth with their hands to mix music clips together in creative ways. You can do something similar with Scratch, mixing different types of media clips (graphics, photos, music, sounds) in creative ways.

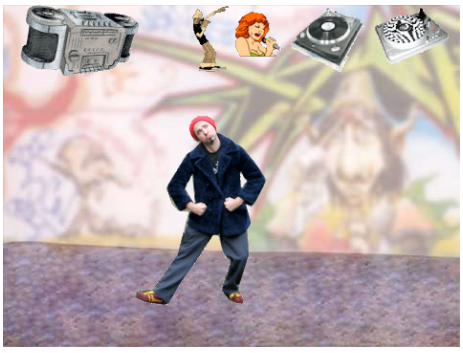
At the core of Scratch is a **graphical programming language** that lets you control the actions and interactions among different media. Coding in Scratch is much easier than in traditional programming languages: to create a script, you simply snap together graphical blocks, much like LEGO bricks or puzzle pieces.



Once you've created a Scratch project, you can **share** it on the Scratch website, the same way you might share videos on YouTube. Or you can embed your Scratch project in any other webpage.

You can get new ideas for Scratch projects by browsing through projects on the Scratch website. If you like one of the characters or images or scripts in another project, simply **download** the project and use parts of it in your own Scratch project.

Below are snapshots from projects that other people created with Scratch. What do **you** want to create with Scratch?



Lifelong Kindergarten Group, MIT Media Lab

The Seattle Times
Winner of Nine Pulitzer Prizes

Local News

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Code-writing clicks as kids get creative

Beginner-friendly computer programming languages are making it easier for children and teens who are eager to try coding.

By John Higgins

Seattle Times education reporter

Children click, swipe and tap away on smartphones, tablets and laptops with an ease that mystifies many of their elders.

Now, thanks to beginner-friendly programming languages, kids can do more than just click on someone else's creation — they can make their own games, animations and art.

This semester, freshman Samuel Ndungi spends first period at Rainier Beach High School learning how to write applications for a smartphone.

"I was surprised that you can do this on your own," Ndungi said. " I thought that it was only people from Microsoft and big companies who can do this."

His teacher, Michael Braun, expects 700 students from the Seattle area to make that same discovery this Friday, at the second annual Puget Sound App Day at Rainier Beach High. Registration for the event ends Monday.

Kids who have never written a line of computer code will get a chance to program their own mobile apps, guided by professional techies during a party-like event that includes a disc jockey, raffle prizes and dance contests — one of many new opportunities for children in the Seattle area to get familiar with coding, both inside and outside of school.

Some who learn to code may get hooked and pursue technology careers — a compelling argument in the backyards of Microsoft and Amazon — but coding is more than just a job skill.

Children who learn it also may discover a powerful new way to think, create and express themselves in the defining medium of the 21st century, regardless of what career they pursue.

A tool for expression

Typical computer languages require programmers to write lines of codes with words, numbers and punctuation marks arranged in a precise and logical order, which can be daunting for newbies.

But in the past few years, beginner-friendly programming languages have emerged that bundle basic instructions into blocks of code that can then be snapped together like Legos into sequences

that run games, stories, animations and other applications.

One of the first and most popular of those languages — known as Scratch — was developed at the Massachusetts Institute of Technology to help children as young as 8 create stories, games and animations for free and share them online.

Kids drag and drop blocks representing different actions into a stack on the screen, creating an easily "tinkerable" script that can make a cat dance, a big fish eat a little fish, or anything else a child can imagine. Since Scratch was launched seven years ago, children from all over the world have shared more than 5 million such projects.

MIT is working with early-child-development researchers at Tufts University on Scratch Jr. — a simplified version focused on storytelling geared for kindergarten through second grade that is expected later this year.

"It's important that the ideas surrounding coding get seen in a broad way," said Mitchel Resnick, director of the Lifelong Kindergarten group at the MIT Media Lab. "It's not just learning the concepts of programming, but seeing programming as a tool that you can use to express yourself."

That's what students in Braun's introductory class at Rainier Beach enjoy most about making their own smartphone apps.

They're using a language developed at Microsoft called TouchDevelop that has some of the blocklike features of Scratch but is aimed at writing applications for mobile devices simply by tapping the touch-screen.

Peli de Halleux, a senior software development engineer working on TouchDevelop, and Chris Mitchell, a principal software design engineer, helped Braun create the course. They've been volunteering in Braun's class for the last three years with Microsoft's Technology Education and Literacy in Schools program.

Sophomore Tony Huynh is taking the class this semester, learning to make his own games.

"You get to put your own thoughts into the game, the animals you want and the kinds of backgrounds you would like to see," he said.

Freshman Shina Williams also is in the first-period class. She wrote a program with about 80 lines of code that paints a picture of her childhood teddy bear.

"It's your own creativity, your own mark of something that's put in there and it stays in there," she said.

Big response from kids

Seattle-based Code.org also uses a drag-and-drop block computer language similar to Scratch in its online "Hour of Code" tutorials, which became an instant hit last December.

"Last year we wanted to reach 10 million students," said Roxanne Emadi, grass-roots strategist for Code.org. "We really didn't think that was close to being possible, and we are now at 34 million so far and our goal for the end of 2014 is to hit 100 million students."

The nonprofit, founded last year by tech entrepreneurs Hadi and Ali Partovi, is trying to elevate coding to the status of reading, writing and arithmetic in schools around the country.

Code.org is working with teachers in 30 school districts across the United States, including Highline, Tukwila, Shoreline, Enumclaw and Bainbridge Island, to train teachers to start computer-science courses in the fall.

Outside the classroom, Seattle CoderDojo , a free club for kids to learn how to code with mentor

volunteers, has been meeting on Saturday mornings since September. It's based on CoderDojo, which started in Ireland in early 2011 and has inspired volunteer-led clubs all over the world.

"Sixty percent of our kids are in fifth grade and below," said Greg Bulmash, a content developer for Microsoft who started the club when his son, now 9, wanted to learn. "We get a lot of the younger kids, unashamed about geeking out for a Saturday morning, and they have a blast."

Kids work on projects they make with Scratch or at Code.org or other sites. They can drop in any Saturday, as long as a parent or guardian comes with them.

"If we get less than 60, there must be something going on that's drawing all the kids away," Bulmash said. "There's so much pent-up demand for this."

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