Computing does not end with computers!

COLORING THE UNIVERSE

4th - 12th grade*

*no prior coding experience necessary

Students can learn how astronomers use computers to create images and understand their data.

COLORING THE UNIVERSE:
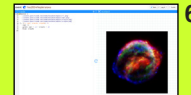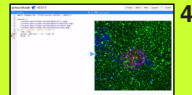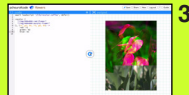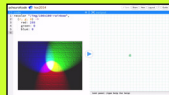## Programming in Pencil Code

Working with data from NASA's Chandra X-ray Observatory and other telescopes on topics from exploded stars, to star-forming regions, to the area around black holes, students learn basic coding (for beginners - no experience required) and follow a video tutorial to create a real world application of science, technology and even art.

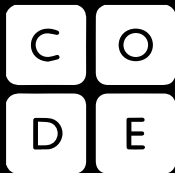Take a look at the activities we provide with step-by-step video instructions for your students on **http://event.pencilcode.net**:

1. RECOLOR Try creating a color by stimulating your own red, green, and blue eye cells with an intensity between 0 and 255. This is how computers create color.

2. SCENE Explore filters and color-shifting using a coloring function that maps input RGB colors to an output RGB colors.

3. FLOWERS Mash up two images using a coloring function to mix red, green, and blue light from multiple images.

4. SUPERNOVA See how astronomers combine different images to create a single colored image of the leftovers from a star exploding.

5. STARFORMING Explore a deep six-wavelength stack of astronomy images, and create your own unique never-before-published RGB image of a star-forming region.

6. KEPLER'S SUPERNOVA REMNANT In 1604 a star suddenly exploded and became the brightest object in the sky. Examine the remnants of the supernova observed by Kepler in the 17th century.

7. BLACKHOLE See X-ray data revealing a supermassive black hole at the center of a galaxy.

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For more information please visit:
http://chandra.si.edu/edu/pencilcode