

TinkerBlocks

Erin Davis and Karishma Chadha
Wellesley College

Principles of Programming Languages
January 25, 2013

Wellesley College

Women's Undergraduate Liberal Arts College



TinkerBlocks Team

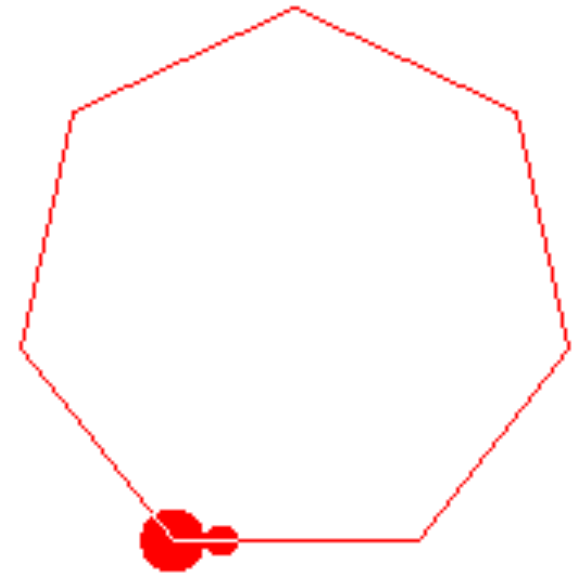
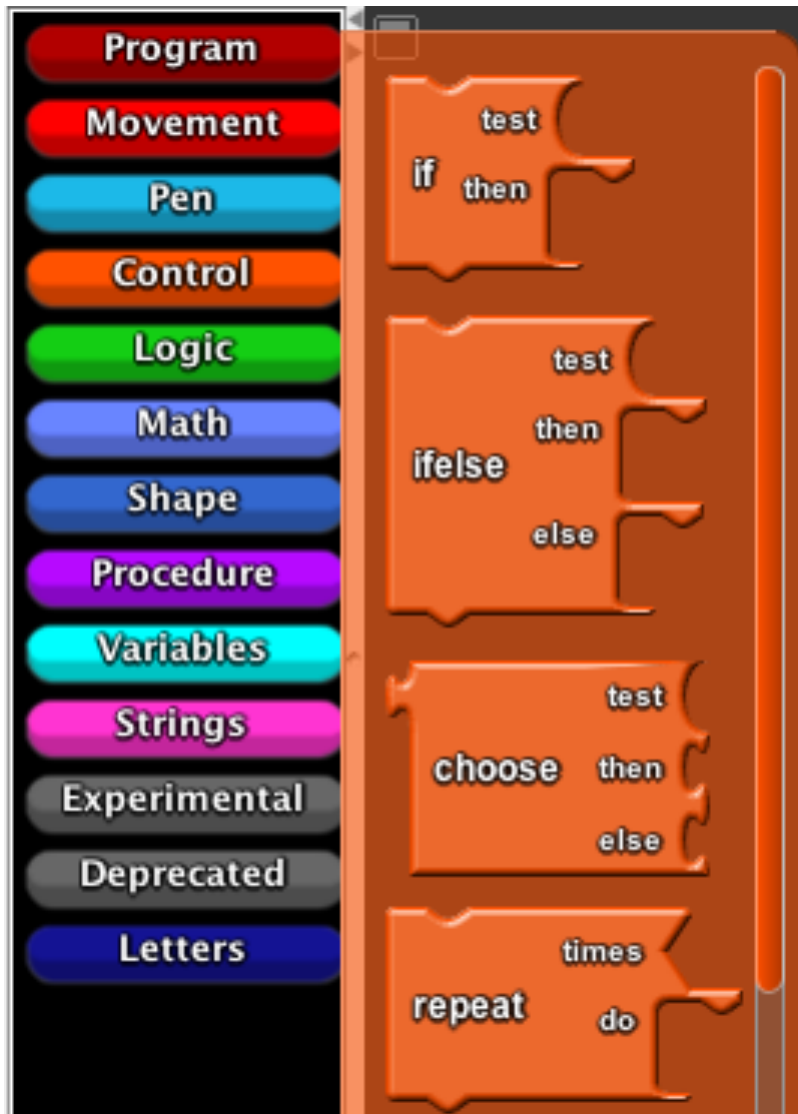


Lyn Turbak,
Advisor



Erin Davis, Emily Erdman, Smaranda Sandu,
Johanna Okerlund, Olivia Kotsopoulos,
Marie Vasek, **Karishma Chadha**

Blocks Languages



TurtleBlocks



Growing in Popularity



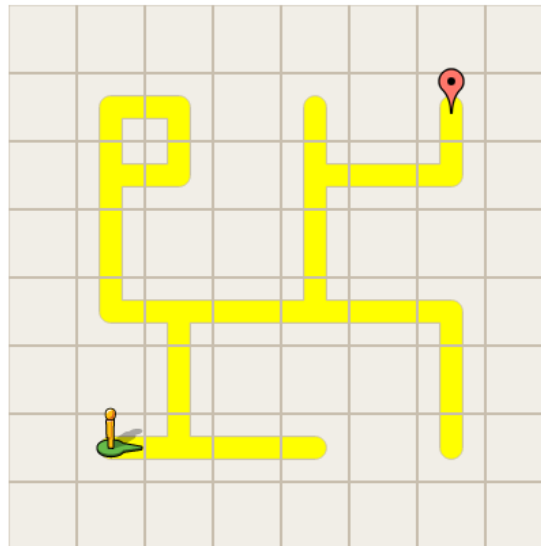
Scratch: multi-media programs, animations, and games
Over **1 million registered users** and **3 million projects**
uploaded to the community gallery



MIT App Inventor: apps for Android smartphones
About **600,000 users** and **1.25 million projects**

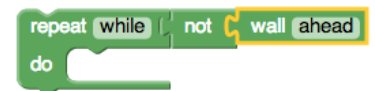
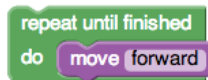
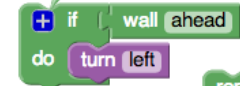
Blockly: being
developed as user PL for
Google products

Blockly > Apps > Maze



Commands
Logic

move forward



TurtleBlocks

TurtleBlocks program



turtle drawing



cardstock



acrylic



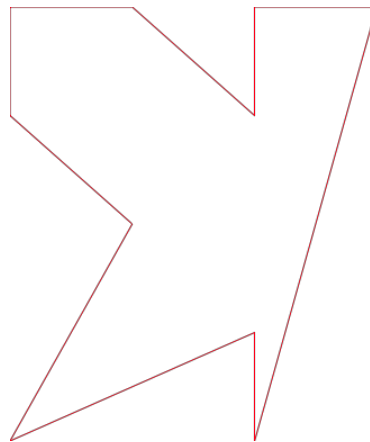
drawing boundary

PictureBlocks

PictureBlocks program



wood artifact

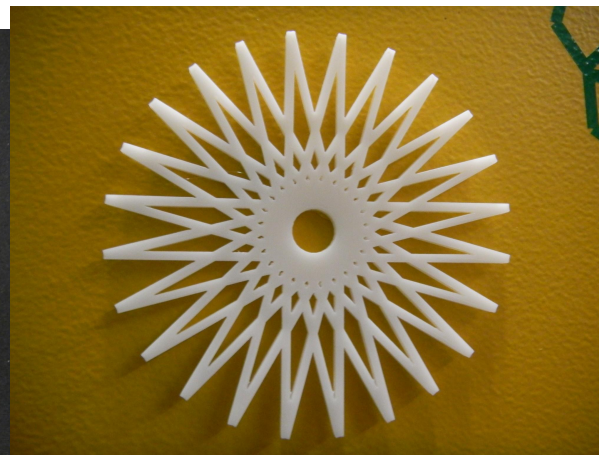
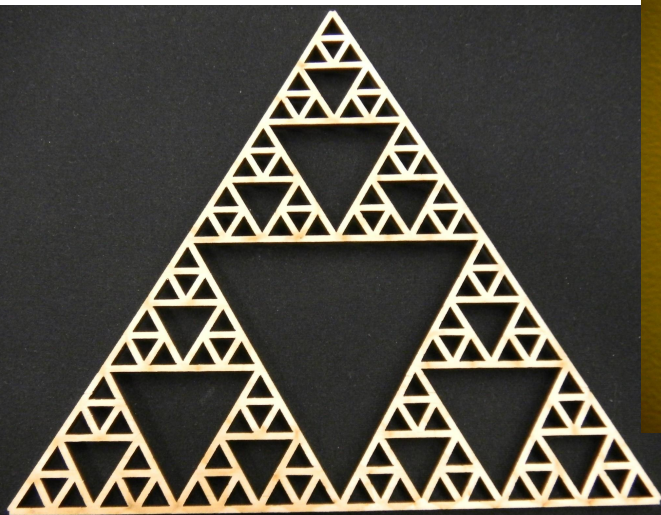
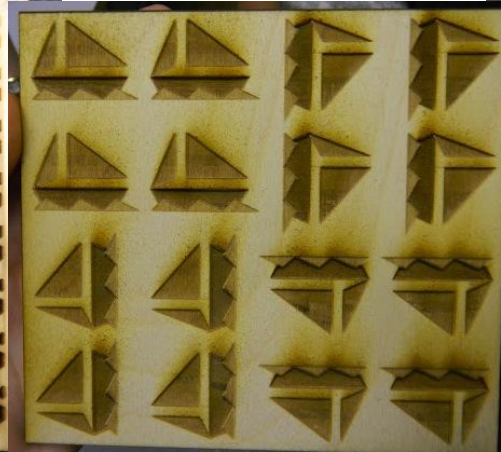
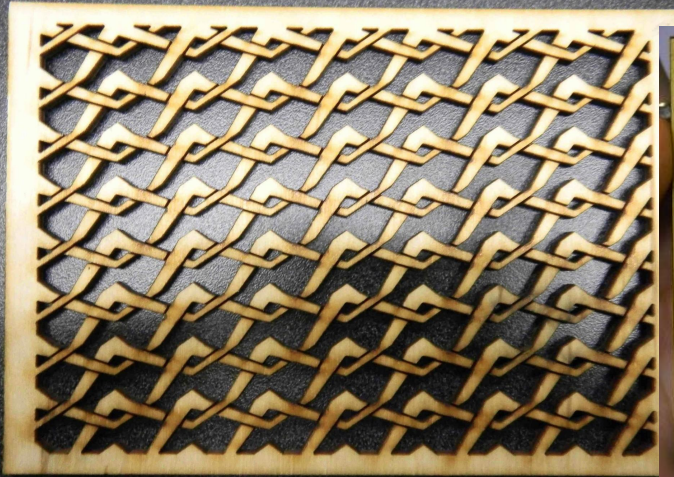


picture boundary



resulting picture

Creating Artifacts



Types by Shape



Number



Boolean



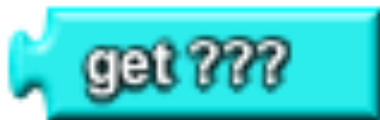
String



Picture

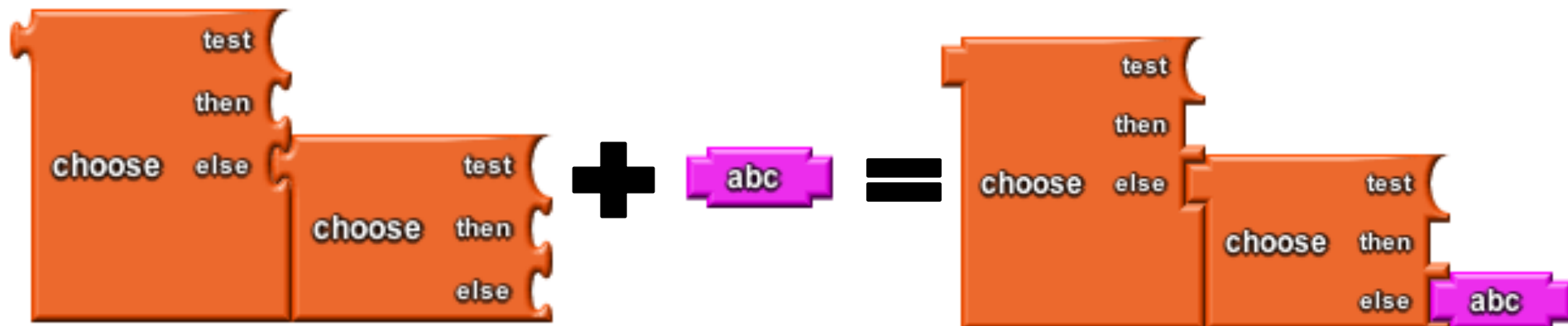
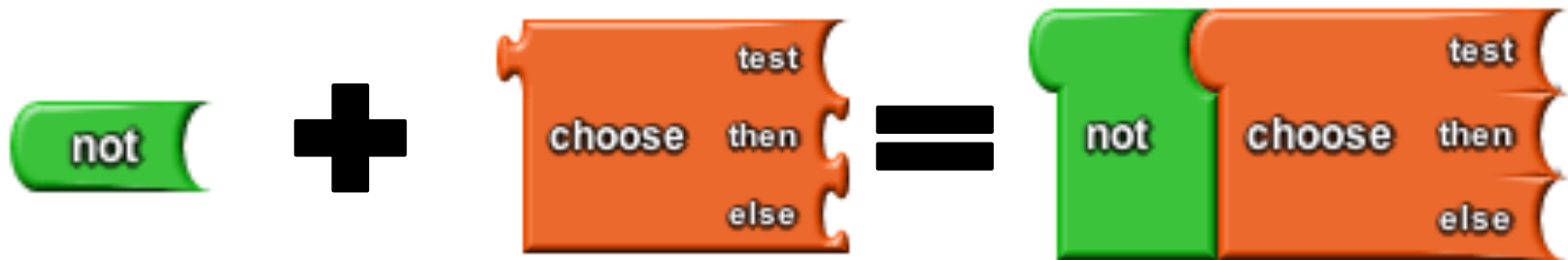
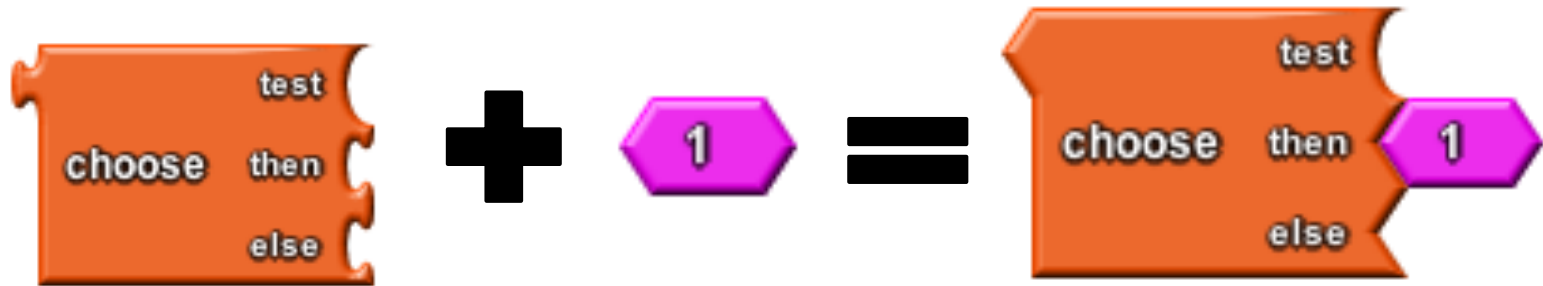


Color

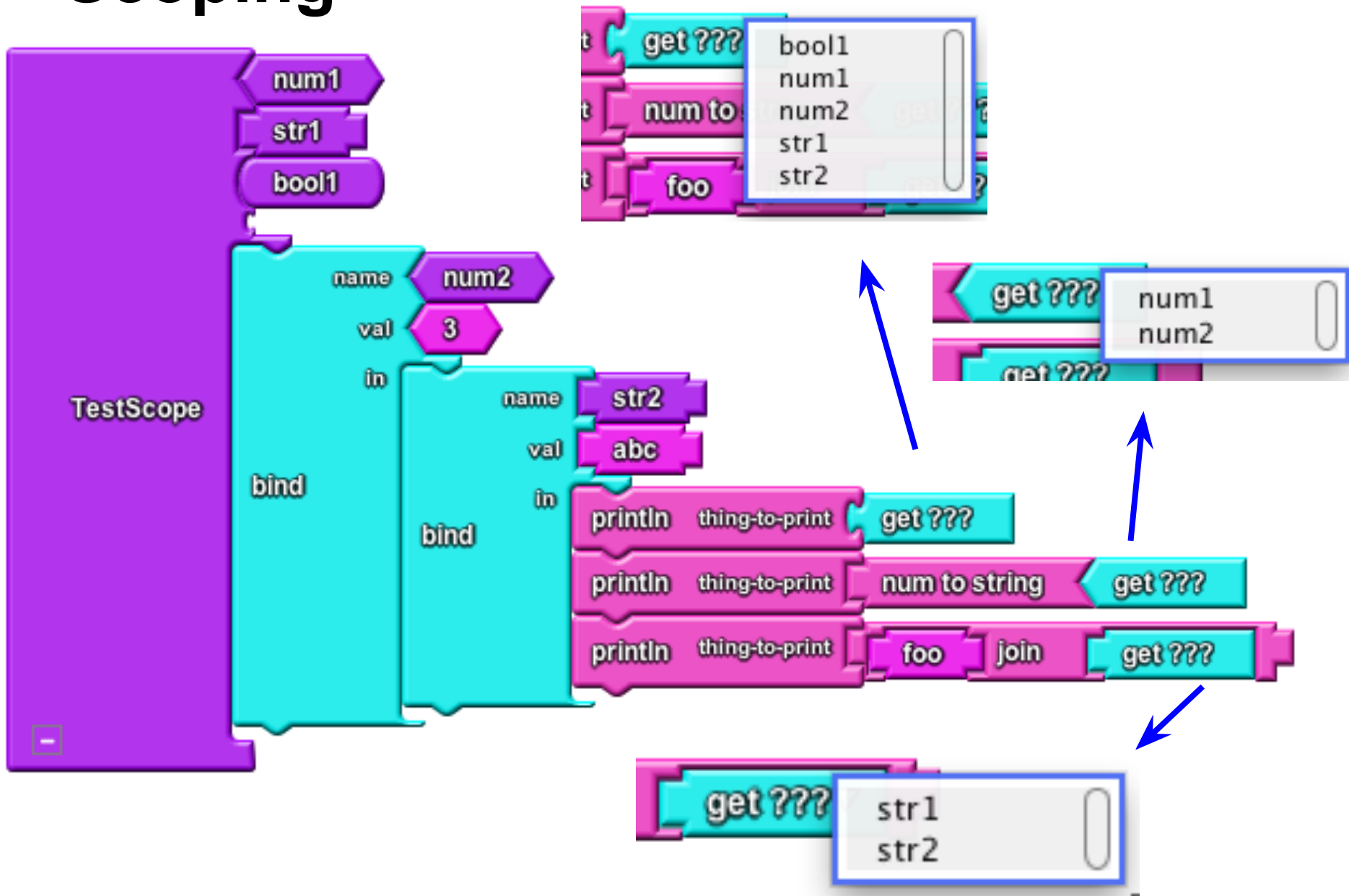


Polymorphic

Polymorphism

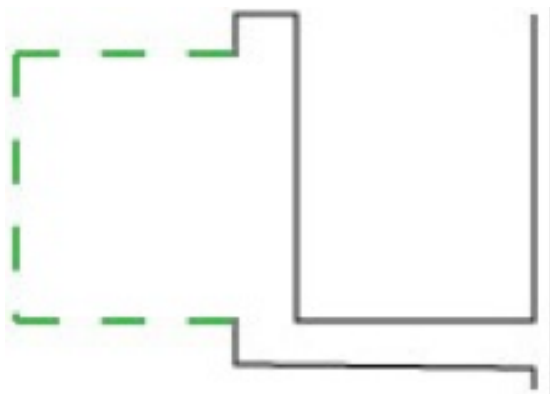


Scoping



Marie Vasek's TypeBlocks

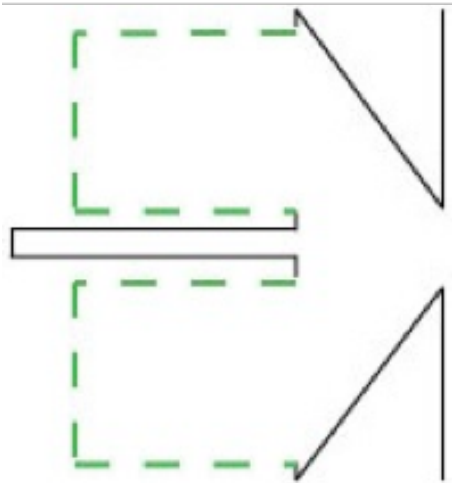
3 Constructors:



list



pair



function



int list



string list list



int * string



bool -> string

TypeBlocks Examples

www.tinkerblocks.org/pubs



`(string * bool) list`



`(string list) * bool`



`bool * (string -> int list)`

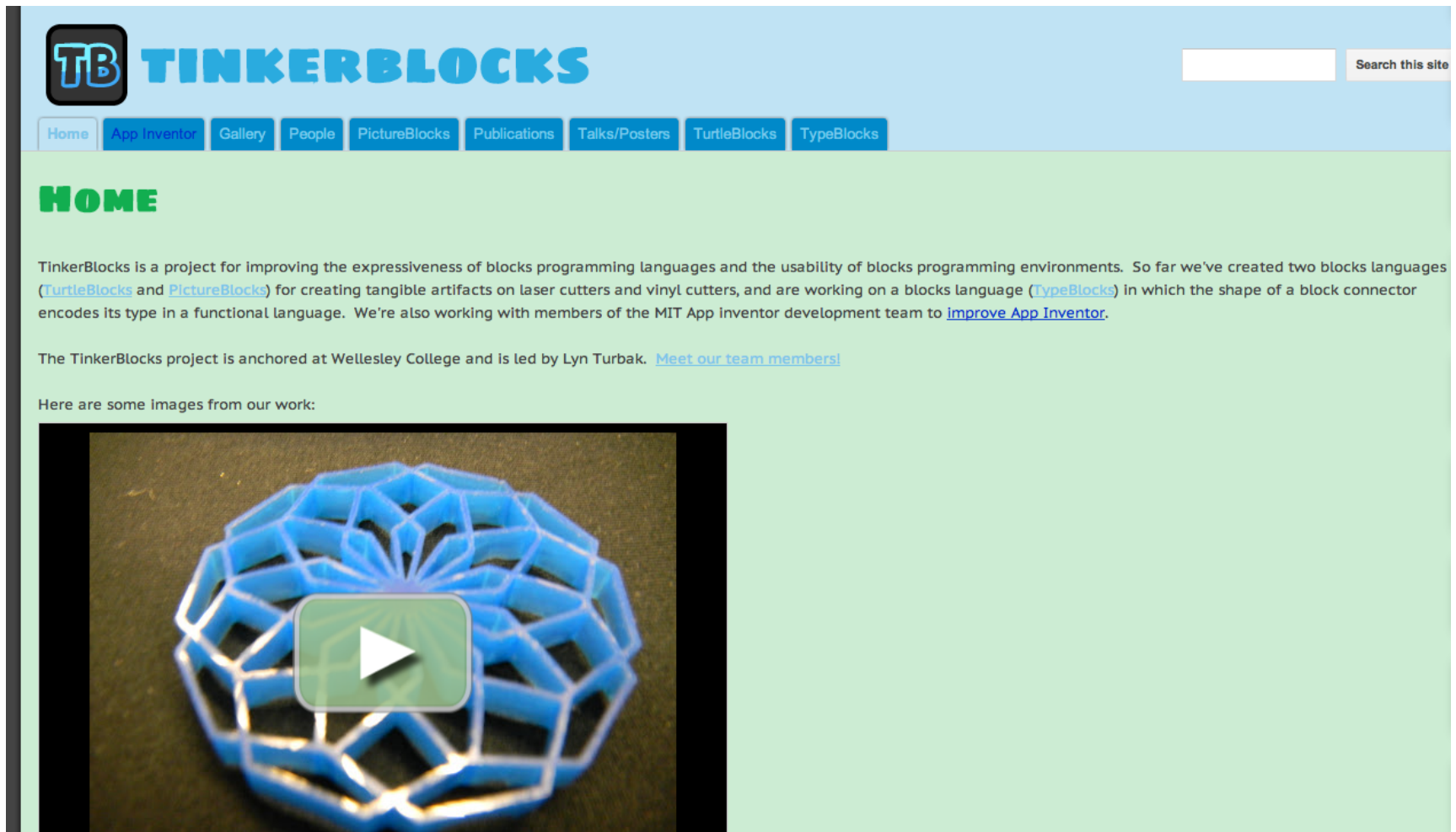


`(bool * string) -> (int list)`

Questions?

More information at www.tinkerblocks.org

And you can see us for a demo!



The screenshot shows the homepage of the TinkerBlocks website. At the top, there is a light blue header with the TinkerBlocks logo (a black square with 'TB' in white) and the name 'TINKERBLOCKS' in large blue letters. To the right of the logo is a search bar with the text 'Search this site'. Below the header is a navigation bar with several blue buttons: 'Home', 'App Inventor', 'Gallery', 'People', 'PictureBlocks', 'Publications', 'Talks/Posters', 'TurtleBlocks', and 'TypeBlocks'. The main content area has a light green background. It starts with the word 'HOME' in large green letters. Below this is a paragraph of text: 'TinkerBlocks is a project for improving the expressiveness of blocks programming languages and the usability of blocks programming environments. So far we've created two blocks languages ([TurtleBlocks](#) and [PictureBlocks](#)) for creating tangible artifacts on laser cutters and vinyl cutters, and are working on a blocks language ([TypeBlocks](#)) in which the shape of a block connector encodes its type in a functional language. We're also working with members of the MIT App Inventor development team to [improve App Inventor](#).' Below this paragraph is another line of text: 'The TinkerBlocks project is anchored at Wellesley College and is led by Lyn Turbak. [Meet our team members!](#)'. At the bottom, it says 'Here are some images from our work:' followed by a large image of a blue, geometric, laser-cut object. A play button icon is overlaid on the image, indicating it is a video thumbnail.