LEARN TO PROGRAM IN PROCESSING:
A LANGUAGE FOR VISUAL DESIGNERS

BY JESSICA COCCIMIGLIO
Learn To Program In Processing: A Language For Visual Designers

Written by Jessica Coccimiglio

Published November 2014.

Read the original article here: http://www.makeuseof.com/tag/learn-program-processing-language-visual-designers/

This manual is the intellectual property of MakeUseOf. It must only be published in its original form. Using parts or republishing altered parts of this guide is prohibited without permission from MakeUseOf.com.

____________________________________
Read more stories like this at MakeUseOf.com
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is Processing?</td>
<td>4</td>
</tr>
<tr>
<td>Great Reasons To Learn Processing</td>
<td>4</td>
</tr>
<tr>
<td>Ways to Get Started</td>
<td>5</td>
</tr>
<tr>
<td>Play With Existing Sketches</td>
<td>6</td>
</tr>
<tr>
<td>Hello Processing! — A Sequence Of Video Tutorials</td>
<td>6</td>
</tr>
<tr>
<td>If You’re Familiar With JavaScript…</td>
<td>7</td>
</tr>
<tr>
<td>Just Dive In: Install Processing</td>
<td>7</td>
</tr>
<tr>
<td>Stay Updated: Evolutions in Processing</td>
<td>8</td>
</tr>
</tbody>
</table>
Learn To Program In Processing: A Language For Visual Designers

By Jessica Coccimiglio

Read the original article here: http://www.makeuseof.com/tag/learn-program-processing-language-visual-designers/

If you’re an artistic person in the 21st Century, you probably know that there’s a lot of potential for creativity with digital skills and programming. Would you be surprised to learn that there’s a programming language out there designed for you?

If you’re thinking, “But won’t I have to learn math and text manipulation before I can do anything visual?” Well, banish the thought!

Today I’m going to introduce you to a programming language that was created in 2002 with visual designers in mind: it’s called Processing.

This is just one beautiful example of 3D art made by using Processing to create a filament sculpture that explores the properties of filaments and the movement of a 3D printer printhead.

This guide will cover what Processing is, why you should learn it, ways to get started, and ways to learn more.

I also interviewed Professor Casey Reas of UCLA’s Department of Design Media Arts, who is an artist and one of the co-creators of Processing. I reached out to Professor Reas for insights into what you can get out of Processing; where the language has been; and where it’s going in the future.

What is Processing?

Processing is a fully-functional programming language based on Java where the introduction is less “Hello World”, and more “Draw a smiley face”.

Programming has been taught for 4 or 5 decades through text and mathematical manipulation. For people who are visual artists, the idea of Processing is to start with a line on day 1 and start constructing visual space. The same things are learned: You learn about variables, modularity, functions and objects and arrays, but it’s all done through visual exploration, and the focus is on making images.

Programs created in Processing are called Sketches. Processing is a great place to start if you’ve ever wanted to create generative art (like in the video below), interactive design installations, data visualizations, or games. It’s also a great way to get your hands dirty making something cool with programming.

Great Reasons To Learn Processing

Processing is ideal for artists, designers, musicians and other creatives to explore, experiment, and develop their craft.

As Professor Reas says, over the past 20 years, the computer has become the most common tool in the arts, and it has largely replaced many traditional tools, such as the photographer’s dark room, and the pre-press process for printing.

As artists and designers have started using software as a primary part of their process, Processing allows them to go deeper and start to think about software not as mimicking these
prior tools or processes such as a dark room or a drafting table. Writing code is a way of thinking about making something new and unique, and getting around some of the constraints of point-and-click software tools.

Processing is built on top of Java. You won’t have to make a big leap when tackling that or other programming languages later. The Arduino micro-controller bases its programming language on Processing too. If you decide that you want to make programs that control things in the physical world (e.g. motors, speakers, screens) or react to things in the physical world (e.g. using sensors for temperature, pressure, light, etc), you’ll find that easy to pick up too.

For example, Prof. Reas introduced us to a woven piece created with Processing.

Software controls the loom, and the machine creates physical textiles in unique patterns based on the binary data that represents a dump of a computer’s physical memory.

Apart from that, as I mentioned earlier, you can create interactive visualizations and games while learning fundamental programming concepts.

As a career, Processing is ideal for exploring new ideas and designs, sketching and prototyping. Professor Reas goes on to explain the concept of a “Software Sketchbook” here:

Processing is not only a professional production tool, it’s focused on learning and understanding. So it’s used a lot for sketching, and one of the main ideas for processing is that it’s a software sketchbook that you’re going to get ideas out of your head and into code in a way where you can take them to the next step. […]

Processing is used a lot by people who are experimenting, making their own tools, really trying to push things in interesting new conceptual and visual ways, but it’s not really used by the large conservative creative agencies.

Processing is also free, open-source, and well-documented – which makes it highly accessible.

Daniel Shiffman, author of Learning Processing and Assistant Arts Professor at the Interactive Telecommunications Program at New York University, gave MakeUseOf some of his reasons why Processing works well for his students:

1. You can just download and run it with no setup complications.
2. It has a compact and elegant API for drawing and graphics which is great for visual designers and artists.
3. It is easily extensible and can be used in all sorts of strange and creative ways.

Ways to Get Started

The best way to get good at something is to start taking active steps (no matter how tiny) right away — putting it off won’t do you any favours. If you’re with me, read on for steps you can start right now to learn to program in Processing. After that, I’ll show you pathways for more learning that includes books and courses you can check out, and experts to follow on social media.

You don’t need anything special to get started with Processing besides a computer with an Internet connection running Windows, Linux, or Mac. You don’t need any background knowledge in programming, but we’ve got a basic primer on programming concepts (and a second-part) you should familiarize yourself with at some point if you’re teaching yourself.
Play With Existing Sketches

You can test Sketches created by others and even edit them to see how their behavior changes on OpenProcessing. It's a great place to host your own creations to share with others. I recommend you check out some of the sketches on this list for some diversity.

Note: If you aren't running Java on your computer, you won't be able to play with these sketches. If you are, go have some fun and come back, I'll wait.

Hello Processing! — A Sequence Of Video Tutorials

Daniel Shiffman is the upbeat educator in a roughly one-hour, high-quality sequence of video tutorials produced by the Processing Foundation. He talks about the things created with Processing, and gives you a chance to test out some simple code and see the drawings it produces, without having to download a thing.
If You’re Familiar With JavaScript…

You can take advantage of the newly-launched p5.js JavaScript library to use your browser page as a Sketch with HTML5!

Using the p5.js library is outside of the scope of this guide, but I thought you should be aware of it. With p5.js, you can convert your Sketches to integrate with websites, like this custom painting application called Neobrush that you can try for yourself.

As you can see, the app created in Processing by Chris Riebschlager, draws thousands of arcs between points chosen by mouse drags and clicks.

Just Dive In: Install Processing

Ready to program your own Processing Sketches? Hit up the processing.org Download page and choose the version for your operating system (there are versions for Windows, Mac, and Linux). Extract the files from the archive folder and open the folder.
If you’re running Windows 64-bit, you should see a set of files that looks something like this when you run the Processing application file:

From here you can go to **File > Examples** to load up a set of complete Sketches that were pre-loaded with the program. Play with the examples and take a look at the code to get a sense of the structures common to Processing sketches.

**Stay Updated: Evolutions in Processing**

As you get involved with Processing, you’ll want to stay up to date with the upcoming changes. Casey Reas and Ben Fry are currently working on releasing **Processing 3.0**, the next version of Processing.