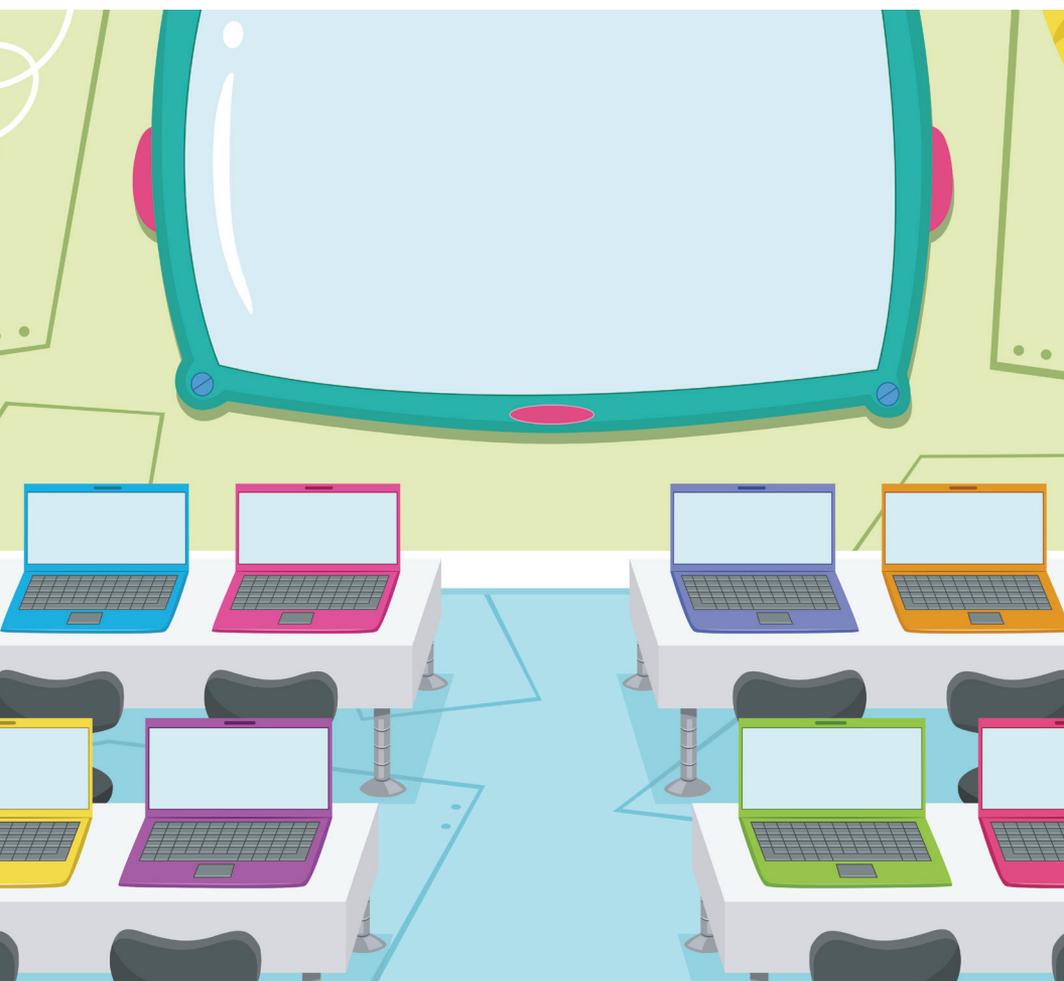


AN INTRODUCTION TO WEBMAKING

A GUIDE BY CODE HEROES



CODE HEROES



Introduction



Learning to code has become increasingly popular in North America over the past 5 years and with good reason. Coding is a skill that is needed for our future workforce, whether you want to open your own business, become a journalist, marketer, machinist or innovator of some type. Understanding code is one of the essential skills that will help you get a job.

As Melissa Sariffodeen, the CEO of Ladies Learning Code put it in a recent Globe and Mail article: “According to current projections, there will be a shortage of more than 200,000 information and communications technology (ICT) workers in Canada by 2020. These figures, published in the 2016 ICTC Digital Talent Strategy Report, paint a grim picture of our not-too-distant economic future. Left unaddressed, this looming skills mismatch will have far-reaching consequences for Canada.”

This guide was designed to help those who have begun to learn to code through our workshops, to act as a quick how-to. We hope you find the content easy to read and enjoyable! We know that empowering yourself with coding is a great way to prepare for the future and we thank you so much for your support.

WHY LEARNING TO CODE MATTERS:

- There aren't enough computer science graduates to fill tech positions in the future
- Coding can teach kids how to express themselves in a uniquely creative way
- Helps teens develop and understand logic that can be applied to many aspects of learning
- Coding can help workers automate their workload and work more efficiently
- The world is becoming more digital, it's time that we all get prepared
- The ability to code is probably the biggest superpower you can possess

YOU CAN FIND US ON

Facebook



www.facebook.com/codeheroescanada

Twitter



www.twitter.com/code_heroes_ca

Instagram



www.instagram.com/codeheroes

Email us at



info@codeheroes.ca

Definitions

Algorithm: A self-contained sequence of actions to be performed.

API: An Application Programming Interface (API) is a set of clearly defined methods of communication between various software components. A good API makes it easier to develop a computer program by providing all the building blocks, which are then put together by a programmer.

Argument: A value that is passed into a function call.

Assignment: When you assign a value into a variable.

Binary: Represents text, computer processor instructions, or other data using any two-symbol system, but often the binary number system's 0 and 1.

Bootstrap: Bootstrap is an open-source collection of tools for creating websites and web applications.

Bug: An error in the program/code.

Computational thinking: Is the thought process involved in formulating a problem and expressing its solution(s) in such a way that a computer-human or machine can effectively carry out.

Concatenation: Combines two things together, such as two lists or strings of text.

Declare: Before they are used, variables have to be declared. Declaring a variable means defining its type, and optionally, setting an initial value (initializing the variable).

Debug: The act of identifying and removing errors in code. The term was coined by Admiral Grace Hopper in 1947.

Function: A function is a re-usable body of code that returns a value. The value returned may depend on arguments (values) passed to the function.

Integer: An integer is a whole number that can be positive, negative, or zero. Unlike floating point numbers, integers cannot have decimal places.

Loop: A sequence of instructions that are continually repeated until a certain condition is reached.

String: A sequence of characters, either as a literal constant or as some kind of variable.

Syntax: Syntax means that there are simple rules for writing code. You need proper syntax in order to communicate clearly with your computer.

URL: The address of a web page. eg: www.codeheroes.ca

Variable: A piece of data that stores information, can be changed at any time.



HTML (Webmaking)

Visit: thimble.mozilla.org

What is HTML?

Every webpage you look at is written in a language called HTML. It stands for Hypertext Markup Language. You can think of HTML as the skeleton that gives every webpage structure. The language is made up of tags that are formed with angle brackets (<>) and a slash (/).

CORE HTML STRUCTURE

```
<html>
<head>
  <title>website title</title>
</head>
<body>
  content of website ...
</body>
</html>
```



THE BASICS

<code><h?> ... </h?></code>	Heading (eg. H1 for largest)
<code><p> ... </p></code>	Paragraph of Text
<code> ... </code>	Bold
<code> ... </code>	Basic Link



HTML (Webmaking)

TEXT FORMATTING

<code><i> ... </i></code>	Italic Text
<code><u> ... </u></code>	Underline Text
<code> ... </code>	Strikeout
<code><sup> ... </sup></code>	Superscript - Smaller text placed above normal text
<code><sub> ... </sub></code>	Subscript - Smaller text placed below normal text
<code><small> ... </small></code>	Small - Fineprint size
<code><tt> ... </tt></code>	Typewriter Text
<code><pre> ... </pre></code>	Pre-formated Text
<code><blockquote> ... </blockquote></code>	Text Block Quote
<code> ... </code>	Bolds text
<code> ... </code>	Emphasis - Shown as Italics in most browsers

OTHER AWESOME TAGS

<code><div> ... </div></code>	Division (or Section) of Page Content
<code>
</code>	Line Break
<code><hr></code>	Horizontal Line
<code></code>	Basic Image
<code> ... </code>	Ordered List
<code> ... </code>	Un-ordered List
<code> ... </code>	List Item (within ordered or unordered)
<code><table> ... </table></code>	Defines a table
<code><tr> ... </tr></code>	Table Row within table
<code><td> ... </td></code>	Table Cell within table row



CSS (Webmaking)

Visit: thimble.mozilla.org

What is CSS?

CSS stands for Cascading Style Sheets. CSS is the language for describing the presentation of web pages, including colours, layout, and fonts. CSS is separate from HTML.

How does CSS work?

CSS uses a selector to point to an HTML element, to tell that element how you want it designed. For example, if you want to change all your paragraphs in your webpages, you use the “p” selector to point to all the <p> tags.



Where do I add CSS?

- In a separate file (external) *
- At the top of a web page document (internal)
- Right next to the text it decorates (inline)

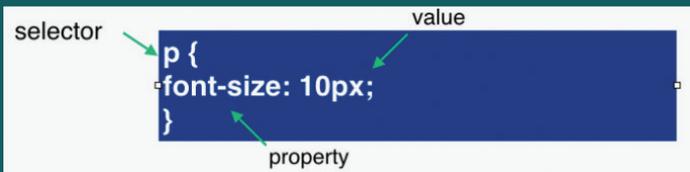
* We recommend to link to the CSS file externally in between our <head></head> tags, like this:

```
<link rel="stylesheet" href="styles.css">
```



CSS is made up of rules

A CSS rule-set consists of a selector and a declaration block: The selector points to the HTML element you want to style. The declaration block contains one or more declarations separated by semicolons.



CSS (Webmaking)

Examples of various CSS properties you can change:

color: #999999;
font-size: 18px;
font-family: 'Comic Sans MS';
font-weight: 100;
font-style: italic;
text-transform: uppercase;
text-shadow: 1px 1px 2px red;
text-align: center;
line-height: 26px;
text-decoration: underline;
display: block;
margin: 0 auto;

padding: 10px 15px 12px 10px;
margin: 15px 5px 15px 10px;
margin-top: 5px;
opacity: 0.5;
border: 5px solid #FF0000;
border-bottom: 1px dashed #DDDDDD;
border-left: 2px dotted #000000;
border-radius: 5px;
background-color: #FFFFFF;
background-image: url('http://...');
background: linear-gradient(to bottom, #FF0000 0%, #0000FF 100%);
height: 10px;
width: 20px;



Scratch (Gamemaking)

Visit: scratch.mit.edu



SCRATCH

What is Scratch?

It is a **free** visual programming language developed by the MIT Media Lab and is used by students and teachers to easily create animations, and games. Scratch provides a stepping stone to the more advanced world of computer programming.

Elements of Game Design

Sprites: The interactive and programmable components of your game.

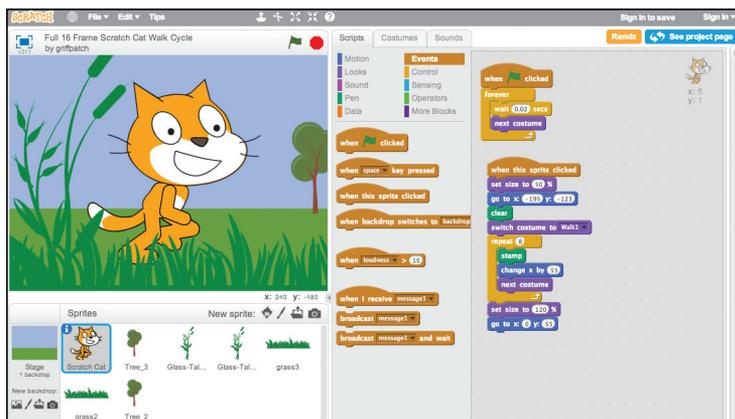
Environment: Background design and musical components that create the look, sound, and feel of your game.

Goals: Is there a finish line for your game? If not, then what is the objective of the game?

Game Logic: The instructions, steps, and rules that bring your game together.

Designing Games in Scratch

After you create your account, you can use the tips section on the right hand side to help walk you through the different components of the game building tool. Just click on the question mark. Here is a screenshot of the entire Scratch User Interface:



Pixlr (Graphic Design)

Visit: pixlr.com/editor

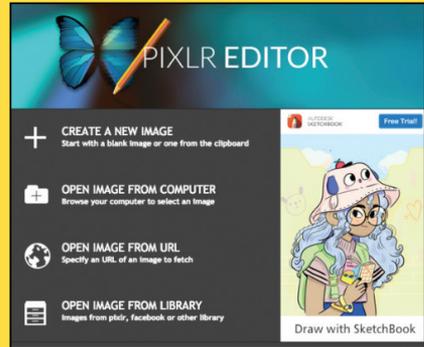
What is Pixlr?

It's a **free** online image editor that works entirely within your browser. It's a great tool that replicates a lot of major Photoshop features for editing and creating images.

Tools in Pixlr



Getting an Image into Pixlr



The Pixlr User Interface

Navigator Panel:

Displays a miniature version of your image, in its default position at the upper right-hand area of the image screen. Use the Navigator panel to zoom in and out and find your way around the photo.

Layers:

Helps you build more depth and still be able to modify each layer as an individual piece of artwork. Helps you manipulate different aspects of your image, while keeping the rest of your layers intact.

History Panel:

This shows you a list of all changes you've made to your image. To navigate these edits, simply click on the one you're interested in. Note that going back to a previous edit and then changing your image will erase all edits after that point, replacing them with new ones.



Python (Scripting)

Visit: trinket.io

What is Python?

Python is a high-level programming language designed to be easy to read and simple to implement. It is open source, which means it is free to use, even for commercial applications.

Working with Data

Python uses variables. A variable stores a piece of data, and gives it a specific name. e.g.: `age=5`

What is a Function?

A function is a bunch of instructions, or lines of code. Functions take arguments that are passed through the () such as the print function:

The Print Function

`print(x)` is a function that writes an object's value to the screen. In this case "x" is the argument that is passed to the function. e.g.: `print ("hello world!")`

Booleans

A boolean is like a light switch. It can only have two values. Just like a light switch can only be on or off, a boolean can only be True or False. e.g.: `age = true`

Strings

A **string** is a data type that can contain letters, numbers, and symbols. It can "string" together all types of characters. They have to be within quotes. e.g.: `name = "Kelly"`

Naming Conventions

- Use letters, numbers, and the underscore
- Begin with a letter (123abc won't work but abc123 will)
- Always use variable names that help explain your program to the humans who will read it. e.g.: `my_age = 99 is much better than a = 99`

If Statements

In the heart of programming logic, we have the if statement in Python. The if statement is a conditional that, when it is satisfied, activates some part of code. Often partnered with the if statement are else if and else.

Tools & Resources

TOOLS

Webmaking with Thimble

thimble.mozilla.org

Graphic Design with Pixlr

www.pixlr.com/editor

Gamemaking with Scratch

scratch.mit.edu

Coding in Python

www.trinket.io

Online compiler, IDE, interpreter, & REPL

www.repl.it

Colour Scheme Generator

www.colors.co



RESOURCES

Teachers Learning Code

www.teacherslearningcode.com

Codecademy: Hands on Tutorials

www.codecademy.com

Code.org (ages 4-18)

www.code.org

Tynker: Coding for Kids (ages 4-15)

www.tynker.com

Code Monkey (ages 9-14)

www.playcodemonkey.com

Code Combat (ages 9-18+)

www.codecombat.com



www.studiodesign.ca

