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Rights

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by Steve Rhine

In the dark ages of technology, about ten years ago, if you wanted to make a website you had to learn html. Does this look familiar to anyone?

```
<html> <head> <meta charset="UTF-8"> <!-- TemplateBeginEditable
name="doctitle" --> <title>Untitled Document</title> <!--
TemplateEndEditable --> <!-- TemplateBeginEditable name="head" --> <!--
TemplateEndEditable --> <style type="text/css"> <!—
body {    font: 100%/1.4 Verdana, Arial, Helvetica, sans-serif;
background: #42413C;    margin: 0;        padding: 0;     color: #000; }
```

Now, programs such as Web Studio, Dreamweaver, Sandvox, and iWeb all make website creation easier thanks to WYSIWYG (what you see is what you get) interfaces. All the code is written invisibly as you drag and drop text, images, and other media on the page. Web based site creation tools have proliferated on the Internet. As a result, the pace of website construction has skyrocketed incredibly. The University of California at Berkeley estimates that 7.3 million new web pages are added to the Internet every day. [1] Easy access to simple web site construction tools took the power from the realm of trained coders and gave it to everyday consumers. While people argue about the numbers, our ability to know what is happening on the global Internet, and whether we are counting pages versus websites, Reuters estimates that we have over a half trillion web pages today. This is 15,000 times as many as we had a decade ago. Content on the web exploded with a shift in capability.

Table 1. Number of web pages on the Internet. [2]

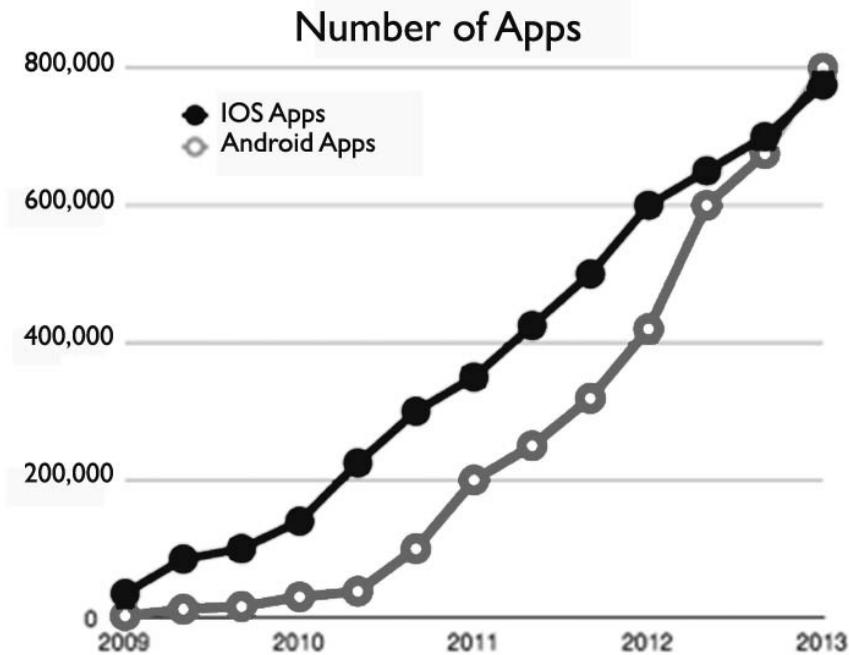|	
1993	130
1994	2,738
1995	18,957
1996	603,367
1997	1,681,868
1998	3,689,227
1999	9,560,866
2000	25,675,581
2001	36,276,252
2012	550,000,000,000

Number of Apps

Figure 1. Number of apps created in iOS and Android.

That same evolution is potentially taking place in the world of apps for phones and tablets at a much more rapid pace. In six years, we have gone from not even knowing what an "app" is to about 800,000 iOS apps [3] and as many Android apps. [4] [5] Windows is trying to get in the game with about 30,000 apps currently. [6] While Apple had a big head start with the iPhone, the number of Android apps has closed the gap, and they are being created at a faster pace. These apps range from simple alarm clocks and calculators to apps that help doctors simulate surgeries for patients to understand. [7]

Meanwhile, one of the fastest growing occupations is software developers. The Bureau of Labor Statistics (BLS) estimates that the demand for developers will grow 30% over the next decade, much faster than the average occupation. [8] With a median wage of about $90,000, it is a profitable venture. However, there is a danger that outsourcing may limit that growth in the US, as programmers can be anywhere in the world. Nevertheless, opportunities for software developers are often surpassing the number of qualified people available.

While a great video on YouTube recently advocates for computer programmers, [9] [10] the growth area is actually for developers rather than programmers. The BLS estimates the demand for computer programmers growing at a rate of 14% over the next decade, slower than the average occupation. That said, knowing something about programming can help you design. Blogs

are engaging in this conversation about how to meet the need for developers and defining what they should know. [11] [12]

In 2010, Google created a web based platform for app development that ultimately was taken over by MIT. The App Inventor program (http://appinventor.mit.edu/) is what Dreamweaver and iWeb were to website creation: the common person's access to WYSIWYG app creation. With drag and drop functionality students, as young as second grade, are writing their own apps. In fact, MIT runs a contest for programming using the App Inventor that includes K-8 students. [13] The first winner in that category was a seventh grade student in India whose parents were worried about school bus delays and whether he made the bus or not. His solution helps parents track their kids on bus rides home from school by using bar code scanning for students to check in and out from the bus while GPS tracks the bus location and automatically sends text messages to parents to keep them informed. His school is using the app this spring. Second place went to a third grade student in Wisconsin.

The App Inventor program has two parts to it. First, the design screen on which students can place objects such as pictures or buttons on the phone/tablet screen where they want them. This design side is the realm of software developers. What should it look like? What should it do? Students simply drag a button, sound, or capability (such as using the accelerometer) to the canvas. My fabulous app that lets you paint on any picture is shown in Figure 2. The tutorials are very easy to follow. While it took me an hour or so to get the idea, design of this app took about ten minutes.

Figure 2. Rhine's App.

The second part of the project is "programming" the code to make the app function. Without knowing any code, all you need to do is drag and drop.

The coding app is just a matter of which puzzle pieces to place on the canvas (see Figure 3). My Motorola Xoom tablet wirelessly connects to my computer and the App Inventor, so that I can see changes to my app as I make them. About 30 minutes later, I was painting the puppy (Figure 4)!

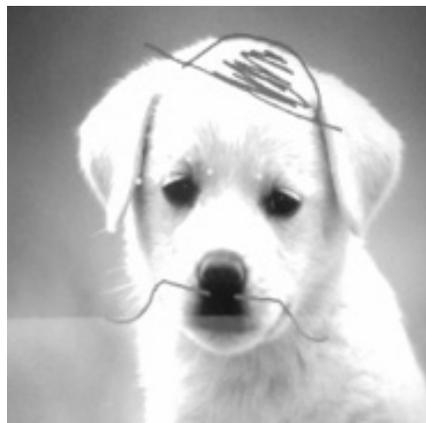*Figure 3. Coding Interface.*

Figure 4. Painting the Puppy

Beyond the silliness is a path to success for students. Gaining the confidence to design their own apps and bring them to life can be a powerful motivator for the software developers of the future. Understanding how the code puzzle fits together will help developers in their design. Having instant access to the results, as ideas blossom in your head, can stimulate innovation. Time will tell if we are only using these tools to paint puppies or solve the problems of the world, like 7th grade stu-

dent Arjun Kammar. But it seems to me, that bringing down the barrier of complex coding, as we have with html coding, opens the door to some cool possibilities.

Notes

[1]   How Much Information? (2000). Retrieved from http://www2.sims.berkeley.edu/research/projects/how-much-info/internet.html

[2]   Data was complied from: BBC. (2002). Internet Starts to Shrink. *BBC.* Retrieved from http://news.bbc.co.uk/1/hi/sci/tech/1738496.stm; Zakon, R. (2014). Hobbes' Internet Timeline. *Zakon.* Retrieved from http://www.zakon.org/robert/internet/timeline/; halejrb-ga. (2003). Q: How many websites? [msg 1]. Message posted to http://answers.google.com/answers/threadview?id=172378

[3]   Castello, S. (n.d.). How Many Apps Are in the iPhone App Store. *About.com.* Retrieved from http://ipod.about.com/od/iphonesoftwareterms/qt/apps-in-app-store.htm

[4]   Castello, S. (n. d.)

[5]   AppBrain (2013). Number of Android Apps. *AppBrain Stats.* Retrieved from http://www.appbrain.com/stats/number-of-android-apps; Google Play. (n.d.). In *Wikipedia*. Retrieved from http://en.wikipedia.org/wiki/Google_Play

[6]   Microsoft claims to have over 100,000 apps for their phone, but there are less than 30,000 apps currently available in the Windows store. http://www.techrepublic.com/blog/window-on-windows/the-countdown-to-100000-windows-8-apps-falls-short/7199

[7]   Husain, I., Aungst, T., & Lewis, T. (2012) The most innovative medical apps of 2012. *iMedical Apps.* Retrieved from http://www.imedicalapps.com/2012/12/innovative-medical-apps-2012/

[8]   Bureau of Labor Statistics. Software Developers. In *Occupational Outlook Handbook, 2012-2013 edition.* Retrieved from http://www.bls.gov/ooh/Computer-and-Information-Technology/Software-developers.htm

[9]   Code.org. (2013). What Most Schools Don't Teach [Web Video]. Retrieved from http://www.youtube.com/watch?v=nKIu9yen5nc

[10] Code.org. (2013).

[11] Code.org (2013); Dern, D. P. (2011).

[12] What today's software developers need to know. *Computer World UK.* http://www.computerworlduk.com/advice/applications/3304124/what-todays-software-developers-need-to-know/

[13] See: http://gallery.appinventor.mit.edu/#page%3DContest