

Goal: Learn to Program!

About

If you're a parent...

Welcome. And thank you for using this material to teach your child (or yourself) a little bit about computer programming. It's a wonderful profession and one that Forbes says¹ is one of the most in-demand professions today. In fact, the industry added more than 70,000 jobs since 2010 and is growing 7% per year.

The outlook for programmers is excellent too. Through 2020, The Bureau of Labor Statistics projects 12% growth for computer programmers² and 30% growth for software developers³. Both computer programmers and software developers create computer programs. And even if your child finds they aren't interested in programming, they'll gain some great problem solving skills along the way.

1. <http://www.forbes.com/pictures/lml45mjek/no-1-software-developers-applications-and-systems-software/>
2. <http://www.bls.gov/ooh/computer-and-information-technology/computer-programmers.htm>
3. <http://www.bls.gov/ooh/computer-and-information-technology/software-developers.htm>

If you're a kid...

If you're reading this, then you probably want to learn how to make computer programs. Good for you. I think you'll find these exercises a lot of fun. And you never know, you might like it enough to want to be a professional programmer someday. What's a professional programmer do? It's kind of like a professional basketball player, baseball player or football player. But instead of getting paid to play sports, professional programmers get paid to make computer programs. Now you might be wondering, "how much does a professional programmer get paid?" Well, let's take an example.

In 2013, LeBron James will make **\$19,000,000 a year** to play professional basketball for the Miami Heat. That's \$19 million and it's a lot of money. Compare that to Sergey Brin, who makes **\$1 a year**. Yep, that's right. Just 1 stinkin' dollar. Now, you might be thinking it wouldn't be much fun to be a professional programmer. But...

Before you make up your mind, let's look at who this Sergey Brin guy is. He is one of the guys who created the Google search engine. The reason he only makes \$1 is because he's already made so much money that he doesn't need anymore. Think about this. Sergey Brin is worth a total of **\$20,000,000,000**. Yep, that's right, \$20 billion. For LeBron James to be worth as much as Sergey Brin, he'd have to make **\$19,000,000 a year for 1000 years**. The moral of this story? Geeks rule!

Of course, not all computer programmers make that much money. But if you work really hard, maybe you'll be one of the lucky ones. And if not, you can still have a lot of fun making things. Just like sports are a lot of fun to play, so is making cool stuff on your computer. So let's go have some fun learning to program computers.

Before we get started

Eventually, we're going to create some fun games, and if you feel brave, you can jump right into game programming by going through the Pong exercise. But if you're a little nervous about jumping right in, try these simple exercises to familiarize yourself with the Scratch environment.

So, before we get started, let's understand a few things.

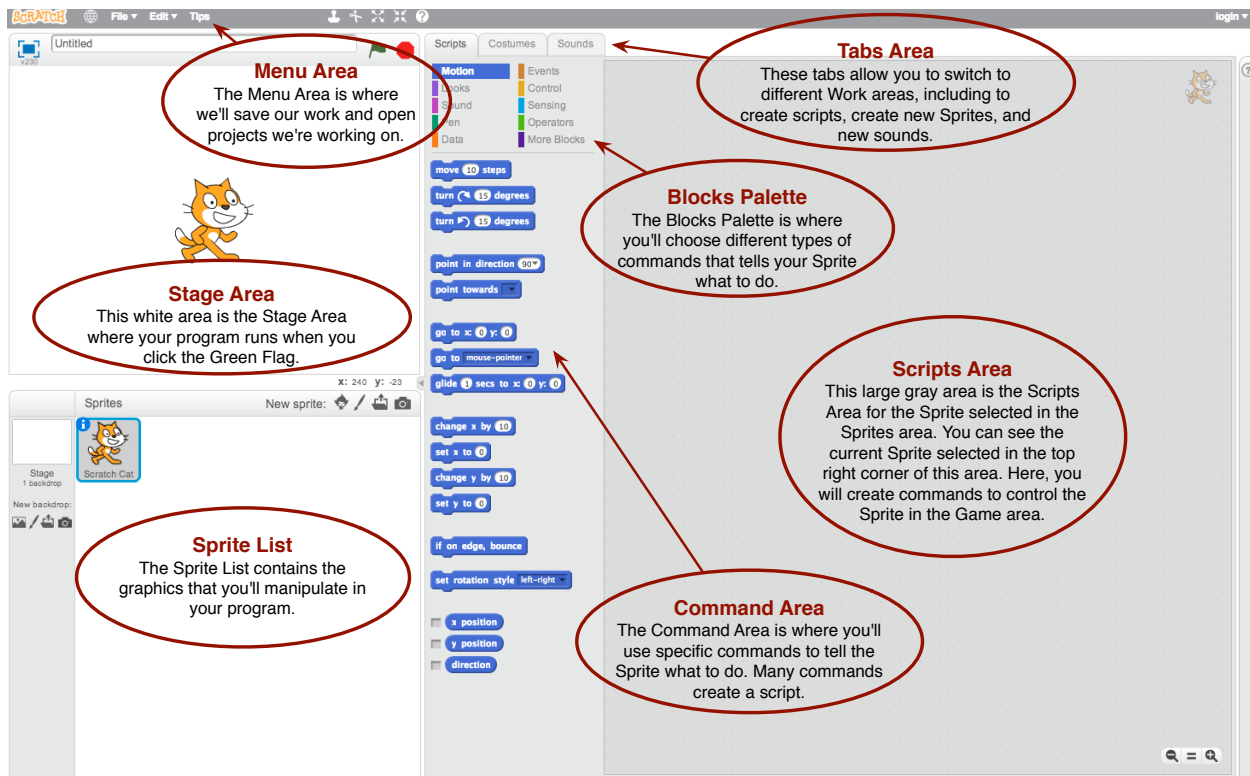
This exercise uses Scratch, a programming environment designed by a school called MIT, which stands for Massachusetts Institute of Technology (it's a really good university). The exercise uses Scratch 2.0, which runs in your web browser. The Scratch environment is found at: <http://beta.scratch.mit.edu/projects/editor/>.

What you see should look like the figure below. Areas of the screen are marked with names. This is important, since we'll be using these names throughout this exercise. There are a few main areas we need to know about:

- **Menu Area:** At the top left is the Menu Area. This is where we'll save our work and open projects that we're currently working on.
- **Stage Area:** This is the Stage area. When we play our games, this is the area where we'll play it.
- **Sprites List:** This is the Sprites List. Here, we see a list of graphics used in our program.
- **Tabs area:** At the top middle is the Tabs area. Here, we'll switch Work areas to do different things, like draw new Sprites and create commands.
- **Scripts area:** This is the area where we'll tell the Sprite what to do. This is our programming area.
- **Blocks Palette:** The Blocks Paletter is where we'll choose different kinds of commands and build a script in the Scripts Area that tells our sprites what to do.
- **Command area:** The Command Area is where we'll use specific commands to create scripts that control our program. We'll drag commands to the Scripts Area to create our program.

What is a Sprite

A sprite is a computer graphic that may be moved on-screen and manipulated.



Important Note

After each step (ideally more often), I strongly encourage you to save your work. To do this, go to the Menu area, select the File menu, and choose “Export to local drive.” Enter a filename and select ok. This way, if for some reason your browser crashes, you won’t lose everything you’ve done. Each time you save, make sure the filename ends with the .sb2 extension. This is Scratch’s way of knowing it’s a Scratch program. Then, the next time you want to open your program, you can go to the File menu, and choose “Import from local drive”. The figure below shows the File menu.

