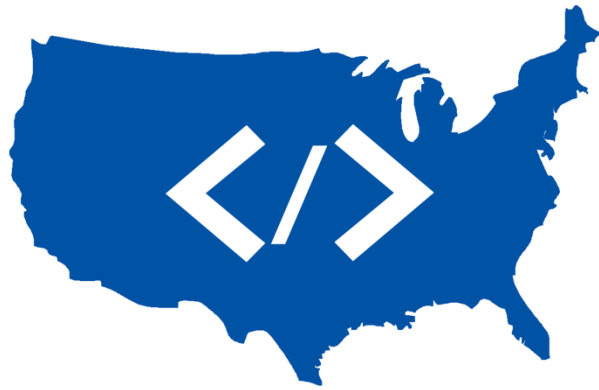# CODE CLUB

RESOURCE KIT

Hi there!

Welcome to the Code Club movement! We are excited you have decided to launch a Code Club. This packet will provide all the information you need to get your club up and running.

Code Club started in 2013 at a library in Mesa, Arizona. The first club was 15 kids and one adult in a small computer lab. Since then, the concept has expanded to multiple locations and helped introduce many children, teens and adults to computer programming – one of the most important skills in the 21st century economy.

The mission of Code Club is to introduce millions of people to computer programming. In the process, we can help people of all ages gain useful technical skills, experience the joy of creation, and learn how to learn.

Some of the people we introduce to programming will find a natural affinity and devote their lives to it. Maybe the next Mark Zuckerberg will get his or her start at your Code Club. Other people will get a taste of computer programming, learn the fundamentals of logic, and be better equipped to function in the technologically advanced world we live in. Whether they participate for one week or several years, Code Club will help prepare children, teens and adults for the new economy. And in the process, they will have a lot of fun.

So thank you for launching a Code Club! You will have an impact beyond measure, and a lot of fun along the way.

Sincerely,

Kelly and Andy

Prenda Founders

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How to Start a Code Club

Are you ready to get started with your very own Code Club? There are a few critical ingredients to a successful code club:

1. Location. This could be a library, school, after-school center or company office. Code Club is a physical meeting of people who will be talking and moving around as they help each other learn computer programming. Make sure your space can tolerate noise and activity.
2. Champion. A local staff member should take ownership of the Code Club at your location. This person recruits and supports volunteers, runs marketing efforts and tracks the progress of the club.
3. Computers with internet. You can use desktops, laptops, netbooks, chromebooks and even some tablets. The operating system can be Windows, Mac, Linux or Chrome OS. The ideal is for each club member to have a computer, although it works to double up if necessary.
4. Participants. You can create a Code Club for kids, teens or adults. You may want to start more than one club to accommodate the different age groups. People are generally interested in learning to program, so if you get the word out through your typical events calendar and marketing program, people will come.
5. Volunteer. The rule of thumb is one adult volunteer for each 12-18 code club participants. This person will not be teaching – in fact, he or she needs no prior knowledge of computer programming. Instead, the volunteer will serve as a facilitator and cheerleader, getting to know the Code Club members and helping them progress on the path toward mastery.
6. Weekly meeting time. Decide when your club will meet. For kids and teens, weekday afternoons are typically a good option. For adults, evenings or Saturdays may be better. A consistent meeting time of 1.5 or 2 hours per week (for example, Mondays 3:30-5:30) makes marketing easier and allows for the program participants to keep momentum in their learning.

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7. Gameplan. This is where we come in. The information in this packet will help the Champion and the Volunteer get your Code Club off the ground. You will find:
   a. Poster Template
   b. Marketing Language
   c. Volunteer Guide
   d. What to Do: step by step instructions for running a Code Club
   e. Resources, including Websites to use, Progress tracking worksheets, and Challenge projects

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Poster Template

Depending on the branding and marketing approach used by your library, you may be able to save time by customizing this poster template. Feel free to create your own posters as well...this is just a suggestion!

Here is the link for the template: http://tinyurl.com/code-club-poster

And in case you want to get fancy, here is an example of a poster that went up in the original code club. (Credit: Co+Hoots Phoenix)

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Marketing language

Feel free to modify these blurbs or create your own. Post to your website, your events calendar, blogs or facebook pages.

Kids or Teen Code Club

Does your [child/teen] love video games? Would you rather have them learning useful skills and exercising their mind? Sign them up for Code Club! We meet every week and learn how to program computers. [Youth/teens] will love being able to create their own video games and websites, and in the process they will gain useful technology skills!

Is your daughter or son the next Mark Zuckerberg or Bill Gates? Computer programming is one of the most important skills for the 21st century. Even if they don't consider themselves a math/science person, bring your kids to the library for Code Club! We meet every week and work together to learn computer programming.

Adult Code Club

Have you ever made your own website? Are you interested in how internet technology works, but haven't had the time to learn more? Join the Code Club, a weekly meeting of adults from all backgrounds who want to further their technology skills. You'll be making websites in no time! No experience necessary.

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Volunteer Guide

The first thing you need to know as a Code Club volunteer is that *you are awesome*! You are changing the world by introducing kids, teens and adults to computer programming. When you are meeting with your club, just think about the future jobs they will have, the apps they will invent, and the endless potential. Will one of your club members invent the next facebook? It's all possible, so THANK YOU for your efforts!

The next thing you need to know is that *you are not a teacher*. There are no lectures in Code Club, no lesson plans, no defined path to learning computer programming. Each person will learn differently, and their learning belongs to them alone.

Instead, *you are a facilitator and a cheerleader*. You will help new members get started, leading a horse to water. You will know the coders and encourage them on their individual journeys. You will facilitate peer to peer sharing by introducing club members to each other. You will track the progress of each club member and encourage them as they progress.

You will get lots of questions. This is an opportunity to reinforce the *growth mindset* in the kids, teens or adults you work with. A fixed mindset is an approach to learning where there is an assumed body of information in the teacher's head that the learner tries to get. In contrast, a growth mindset is a quest to figure it out for oneself. Code Club participants will be learning how to learn as they read, explore, tinker, share, ask, answer, teach, and build.

To reinforce the growth mindset in your club, there is a specific process you should follow when a participant asks you a question:

1. Ask what the participant has done to solve the problem on his/her own. What have you read? What have you tried? Often, the solution becomes clear as the participant explains the problem.
2. If they have tried everything they can think of, ask who else they have talked to about the problem. Getting help from a peer opens up a new

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layer of learning, builds camaraderie, and helps solidify the concepts in the person providing the help. In some cases, you can make direct connections ("I know Irina just worked on something similar. Louis, come with me and I'll introduce you.")

3. Most problems will be solved by this point. If a group of participants still have not figured it out, you can sit with them and explore it together. Don't feel like you need to have the answer; figure it out together. Googling a concept together often clarifies the problem and it reinforces the growth mindset.

You may be concerned about your lack of skills. Remember that you are not a teacher, and you are not expected to have all the answers. Take a look at this excellent TED talk:

http://www.ted.com/talks/sugata_mitra_the_child_driven_education

The entire thing is worth watching, but specifically pay attention to "the method of the grandmother" (starting at 9:20). The basic idea is that a little encouragement can go a long way, even if you have no idea about the technical subject matter.

So you're ready to go! Take a look at the following section – we will walk you through the specifics of running the club. And don't forget the first thing. You are AWESOME! Thank you for your work. You are changing lives and changing the world. All the best to you in your efforts.

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What to Do

This guide explains the specific things to do at Code Club, starting with the first day and throughout the weekly meetings.

Structure: Code Club meets during a fixed time each week for 1.5 to 2 hours. For example, the club we run in Mesa Arizona meets every Monday from 3:30 to 5:30 pm.

First Week: At the beginning of the club, make sure to greet all the parents and kids. You can have them fill out a registration form (see sample form in "Resources" section below) including contact info so you can reach them in the future. Invite the parents to stick around as you explain the guiding principles (self-guided learning through projects, helping each other, etc) and then show this video from the website code.org. A projector or large television screen is ideal for this.

https://www.youtube.com/watch?v=nKIu9yen5nc

Once you have set the stage (no more than ten minutes total), invite the parents to stick around and help. Then have the kids go to code.org and begin the Hour of Code project. This is an easy and fun tutorial that uses videos and game-like

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puzzles to introduce the basic concepts of computer programming. It should take 30-90 minutes, depending on the person. As the kids work through the puzzles, make sure to follow the guidelines for questions discussed above!

After completing the Hour of Code, there are two options.

1. Some people will enjoy the puzzles and want to keep going. They can find additional tutorials at code.org, under the heading "Beyond the Hour of Code"
2. Other people will be ready to create their own projects. This is a good time to introduce scratch.mit.edu, an online platform that uses a similar graphical programming language as code.org, but allows for much more flexibility. Most kids will begin exploring and soon be creating games and animations of their own.

After the First Week

You will notice that some of the people attending during the first week do not come back. That's ok! They were introduced to programming and the world will be better for it.

Other people will return. This is the beauty of self-guided learning; you don't need to stand in front of the group. Simply greet the kids with a handshake, high five or knuckles as they come in. Remember their names if you can! Nametags can help. They will find a computer, log into Scratch or Code.org, and be off to the races.

With the returning coders taking care of themselves, you can devote your attention to the newcomers. Introduce yourself. Learn their names, ages and interests (e.g. do you want to make video games or websites?). Greet the parents.

Then – and this is the most important thing – walk the new coder into the room and introduce him or her to a "buddy." Nothing formal, just pay attention to which people are catching on quickly and ask them to help the new person get

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started. You can say, "hi Jill this is Alex. It's his first time at Code Club. Can you show him how to get started on code.org?" You then encourage the new person to speak up and ask their buddy if they have any questions, and you walk away. Try to visit them 2-3 times during the meeting and see how things are going.

Progress

Once they get a taste of computer programming, many of the participants will want to build their skills and improve. We have created a set of tasks and skills that can be mastered using free web-based tools. Some of the participants will enjoy the feeling of progression as they complete "levels" and move forward in a game-like track. You can make it extra fun by signing off completed levels and tracking progress in a worksheet or spreadsheet. See "Resources" section below for a list of levels.

Challenges

Each week you will post a challenge project that the code club members can choose to work on. Challenges are designed to emphasize one or two coding concepts through a 60-90 minute project. They are entirely optional. Those people who decide to work on the challenge can show their project to the group during the show and tell session at the end.

We have provided a number of challenges you can use. But feel free to create your own!

Show and Tell

The last 15-30 minutes of Code Club is a show and tell session where the participants project their projects onto a screen and explain what they made to the rest of the group. Those who worked on the weekly challenge are invited to show first, and others can also show if there is enough time.

Showing is purely optional; some people will simply not want to do it. But for many of the participants, show and tell is a powerful incentive to work hard on a project, optimizing their learning.

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Logistically, it is a good idea to have all the kids log out and turn off computers before show and tell starts. You can emphasize the ideas of respecting the work of other people and learning from each other. To avoid a mad rush, you can line up chairs on one side of the room and have the kids sit in the chairs. Or write their names in a list on a whiteboard. Easiest is to have a cable connected to a screen or projector and plug in the laptop for each presenter. But it also works to have one computer set up and have the presenters take turns logging into their scratch account.

It may be necessary to remind the audience to be quiet and respectful when the presenter is talking. Other participants can ask questions, and the presenter will show the code and demonstrate the game or animation. Then everyone claps.

You can also use this time to make announcements (e.g. no club meeting next week, hackathon next Saturday, etc). We also use the time to reinforce our ethos by reciting in unison the Code Club motto: "Build Something Awesome." The kids are enthusiastic about this and love shouting.

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Resources

Software Tools

Code Club relies on free web-based tools that teach concepts of computer programming, provide puzzles and projects, and allow free form creation of games, animations, and websites.

Code.org is an introductory website with promotional videos and lessons. This is a great place for young coders to begin (7-8 years old) because it uses Angry Birds, Flappy Bird, Frozen and other fun characters. It is also fun for older coders. Even though it is easy at first, it provides a sense of confidence and also lays a foundation of basic coding concepts. The computer language is called blockly, a graphical way of connecting things together. URL: www.code.org

Scratch is a web-based platform for creating games and animations. It also uses graphical blocks, making it easy for new coders to grasp the concepts without worrying about syntax. There is also a robust ecosystem where coders can see the work of other people, remix projects or reuse components with the backpack feature. URL: scratch.mit.edu

Khan Academy is known for math education, but it also has a strong platform for learning javascript, one of the most popular languages for scripting on the internet. Tutorials include a voice-over and display of the code, with the ability to pause the video and tinker with the code. You can see the effect of a change immediately. Khan Academy also has sharing and spinoff features, and extensive documentation. URL: https://www.khanacademy.org/computing/computer-programming/programming

Codecademy provides introductory tutorials for javascript, html, css, ruby, python, php and other languages. Codecademy is designed to be fun and engaging, but it does require syntax and code layout. For these reasons, it is best for coders that are at least teenage, or have some experience with coding. The projects in Codecademy are engaging overviews, and motivate learners to work on the basics. URL: http://www.codecademy.com/

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Progress Tracking

To help the code club participants master skills and measure their progress, we have created a set of "levels." The participants can work on these in the sequence they are written or a la carte. You can make the learning more appealing by signing off specific achievements as the participants master them. You may even consider recognition, certificates or prizes for those passing from one level to the next.

This spreadsheet lays out a plan for progress and explains the individual steps along the way.

http://tinyurl.com/code-club-progress

Challenge Projects

Each week there is a challenge project posted, either written on a whiteboard or projected on a screen. The challenge is optional, but you should make sure everyone knows about it and answer any questions. Let them know that the people who work on the challenge will have the chance to show their work to the whole group during the show and tell portion at the end.

You can find a set of challenges to choose from at this link. But feel free to create your own!

http://tinyurl.com/code-club-challenges

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Sample Registration Form

Club	
Child Name	
Gender	
Birth year	
School grade	
School name	
	Parent/Guardian info
Parent name	
Parent phone	
Parent email	
Alternate phone	
Alternate email	
	Usernames (so we can share their work)
Scratch	
Khan academy	
Codecademy	

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Upgrade

The mission of Code Club is to introduce millions of kids to computer programming. We genuinely hope that the materials in this kit are helpful for you as you participate in this exciting effort.

We have learned a few things along the way, and being somewhat tech-inclined and entrepreneurial ourselves, we realized that there is a lot more we can provide to help code clubs. In order to provide that additional help, we need to hire people to write software, train volunteers, and provide support.

So we are launching a premium version of Code Club. The idea is to make it extremely easy to launch and run a code club, with minimal time commitment and no computer expertise. The cost of the premium version is an annual subscription fee paid by the library, school or host institution.

More information is available at library.prenda.co

Software

The Code Club software will be the primary navigation of the club participants as they learn to code. It will:

- Facilitate registration – tracking parent contact info, etc
- Automatically record attendance each week
- Track progress through tasks and levels
- Allow coders to ask questions to experts (only after they try by themselves and in a group)
- Allow coders to see weekly challenge and submit online
- Schedule presentations for show and tell session

Training and Support

- Custom training session for volunteers (delivered via webinar)
- Email support for volunteers
- "Ask a coder" service for tricky programming questions

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