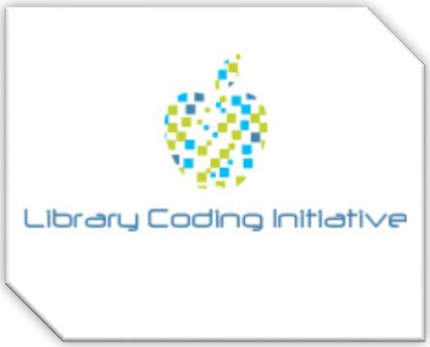
Library Coding Initiative

Youth Competitive Programming Circle
staff@ycpc.us



The Library Coding Initiative

Youth Competitive Programming Circle's Library Coding Initiative provides libraries, districts, and cities with the resources to educate disadvantaged youth in computer science.

Why libraries?

In impoverished areas, a significant number of children have no access to computers or the Internet at home: for these individuals, the library serves as the primary connection to the internet. Consequently, the library is a crucial piece of infrastructure that disseminates the vast plethora of knowledge available on the Web to students. LCI piggybacks on this function to provide students with technology-related education. In doing so, YCPC will assist librarians and other interested community leaders in starting clubs, holding classes, and providing the requisite software and coding resources to allow students to jumpstart their computer science careers.

Ways to Get Involved

1. Contact your local library

Reach out to your nearby library or librarian and ask them to get involved. If you are a librarian or a community leader, please send an email to staff@ycpc.us. If you have any events or workshops we would love to assist with our enthusiastic staff members and programming resources.

2. Get your school involved

Consider starting a chapter – it's a fun and easy way to jump into the world of coding. If you're interested on getting your peers into the Library Coding Initiative, feel free to read our helpful guide to running a chapter at www.ycpc.us/documentation and reach out to us at staff@ycpc.us.

Youth Competitive Programming Circle's official chapter documentation is also a useful reference for libraries:

https://www.ycpc.us/documentation

School Districts

Through the Library Coding Initiative program, Youth Competitive Programming Circle partners with school districts to improve student awareness of available educational resources both online and in their local library. With the help of teachers and student leaders, learners will be exposed to coding workshops and other educational experiences. Students who seek to further their education will know where and how they can get the help they need to pursue an education in STEM.

For more information regarding our Minecraft Coding Camp program, please visit:

https://www.ycpc.us/mcc.pdf

Libraries

Youth Competitive Programming Circle provides a reference packet full of free online course providers for students to learn coding by and also instructions on how to install developer interfaces on library computers. Also, YCPC provides a useful chapter documentation tool full of easy-to-hold events for use by clubs and libraries alike, whose contents range from study groups to Minecraft Coding workshops. With a detailed process, librarians even without a background in computer science can hold these events and help attract and expose more students to the libraries educational resources.

Coding Tutorial Resources

- **YCPC Courses** (https://www.ycpc.us/courses)
  Tailored to kids in middle and high school, YCPC courses are specifically designed to be user-friendly and instructive, with hands-on mini-projects, periodic quizzes and useful video lectures.
  - Difficulty: Medium
  - Cost: None
  - Languages available: Beginners Python, Java (at a later date), Web Fundamentals (at a later date)
  - Target age group: Adolescents attending middle or high school
- **Udacity** (https://www.udacity.com)
  Sponsored by technological institutions like Facebook, Google and AT&T, the courses at Udacity satisfy every programming aspiration by covering a wide variety of programming languages.
  - Difficulty: Beginner-Advanced
  - Cost: None ($200/month for Nanodegree programs)
  - Languages available: Web, Android, iOS, Java, JavaScript, Python, among others
  - Target age group: High school and college students
- **Codecademy** (http://www.codecademy.com)
  Codecademy is perfect for novices who want interactive and easy-to-follow tutorials.
  - Difficulty: Beginner-Medium
  - Cost: None
  - Languages available: HTML, CSS, JavaScript, jQuery, PHP, Python, Ruby
  - Target age group: All ages
- **Treehouse Club** (https://teamtreehouse.com/)
  The comprehensive courses provided by the Treehouse Club are excellent for serious students.
  - Difficulty: Medium-Advanced
  - Cost: $25/month (Basic Plan); $49/month (Pro Plan)
  - Languages available: HTML, CSS, Ruby, Android, WordPress, Python, Java, PHP, iOS
  - Target age group: College students and older

How to Install Various Coding Languages

In order to convert user-inputted code to code that the computer can understand, many people use compilers to create executable programs. In addition to compilers, some languages also need separate executable applications in order to start programming. Here are some tutorials for some programming language compilers:

Python

1. Go to https://www.python.org/downloads/
2. Click on "Download Python 3.4.3". Execute the downloaded application.
3. A command prompt box should pop up. Have fun coding in Python!

Java

For setting up Java, you will need the Java Development Kit (JDK) and a compiler called Eclipse IDE.

1. Go to http://www.oracle.com/technetwork/java/javase/downloads/index.html
2. Then, click the "download" button located under the word "JDK".
3. Under "Java SE Development Kit 8u45", accept the license agreement, and then select the version of JDK that matches your operating system.
4. Download the installer and run it to install JDK.
5. To install Eclipse IDE, go to http://www.eclipse.org/downloads/packages/eclipse-ide-java-developers/marsr
6. On the right, download the appropriate file that matches your operating system.
7. Extract the file with a tool like WinRAR to a familiar location.
8. Once the file has been extracted, go into the folder and make a shortcut of the Eclipse application and put it in your desktop for convenience.
9. Open Eclipse IDE. Have fun coding in Java!

Xcode (Mac OS only)

1. Go to https://developer.apple.com/xcode/downloads/
2. Download "Xcode 7 beta 3"
3. You will be prompted for your Apple ID and password
    a. If you have an Apple ID: input username and password.

b. If you do not have an Apple ID: create an Apple ID with the required information and proceed.

4. You will be at the Apple Developer website. Head on over to https://developer.apple.com/xcode/downloads/
5. Click the link to download "Xcode 7 beta 3"
6. The download is very large, so it may take a long time.
7. Open the .dmg file once it has finished downloading.
8. A dialog box will pop up for you to install Xcode in your Applications folder. Do so by dragging the Xcode icon to the Applications folder.
9. Once Xcode has finished copying to Applications, open Xcode directly from Applications.
10. Be sure to acquire admin password in order to consent to the Xcode license agreement.
11. Xcode is now open. Have fun coding in Xcode!

VB.NET Express (Windows only)

1. Head to https://www.visualstudio.com/downloads/download-visual-studio-vs#d-express-windows-desktop
2. Click "Install Now" under "Microsoft Visual Studio Express 2013 with Update 4 for Windows Desktop – English".
3. After providing the needed details click on the "Your Selection" link.
4. Once wdexpress_full.exe has finished downloading, launch the installer.
5. Proceed through the installer's instructions. When the installer is done installing click "LAUNCH"
6. Click "Not now, maybe later" when you are prompted to sign into Visual Studio.
7. VB.NET installation has now finished. Have fun coding in VB.NET!

WAMP and AMPPS (for HTML, CSS and JS)

For Windows – WAMP installation:

1. Head to http://www.wampserver.com/en/
2. Scroll to the bottom of the page. There should be a "Downloads" section. Select your current operating system.
3. Once the installer has finished downloading, open the installer and follow the instructions.
4. To start your first WAMP server, open the WAMP application. Once opened, a WAMP icon will appear in your taskbar. If it's green then all services are working. If it's yellow then some services are working. And if it's red then no services are working.
   NOTE: usually you need to give the server a minute to transition from red to green.

5. Once the icon is green, your WAMP server is working. If not green after a few minutes, right-click the icon and select "Restart All Services".
6. Have fun coding in HTML, CSS and JavaScript with your new WAMP server!

FOR MAC and LINUX– AMPPS Installation

1. Head to http://www.ampps.com/downloads
2. Scroll to the bottom of the page. Select your current operating system.
3. Run the installer and follow the instructions.
4. AMPPS is now done installing. Have fun coding in HTML, CSS and JavaScript with AMPPS!

Ways Libraries Can Increase Computer Access for Programming Purposes

1. Allow all kids to use computers for programming

All kids that come to the library will not have to go through the process of applying for a library card to learn how to code. This change will make the students' coding experience much more accessible.

2. Preinstall development kits and development environments/compiler for library computers

The process of installing development kits and compilers can be convoluted at times. One way to make the experience of learning code more efficient is to preinstall all the development kits and environments/compilers on every library computer. Using the instructions detailed in "How to install various coding languages", librarians can install the requisite programming tools ahead of time.

3. Provide helpful coding references as browser bookmarks

Default bookmarks that serve as references for coding will be helpful for learning unfamiliar syntax one of the major stumbling points in learning programming.

4. Provide a convenient method for kids to save their code via USB

Students will be able to conveniently export all the code they have worked on to a USB to work on at home or the next day at a workstation, as library computers often cannot save files.

Managing Study Groups

YCPC Study Groups are a community based schema of studying YCPC courses. Below is a rough outline of what a group can do.

Study groups meet weekly for discussion and projects; to prepare for meetings, members view any video lectures, quizzes, study guides and other studying materials at home utilizing the online course material.

At library meetings, students collaborate on the given project/challenge. Students collaborate and add features to the program as a group: a difficult but necessary skill in larger teams of developers.

A librarian is also needed to oversee the study group. They lead the discussions, ensure member attendance, keep the environment positive, and make sure the study group isn't going off track.