



EDUCATE. INSPIRE. PURSUE.



THE DEVELOPER PROGRAM GUIDE

BY STEM LEAGUE

JUNE 29 - AUGUST 21, 2020

A NOTE FROM THE FOUNDERS



Elizabeth Lin & Christin Lin

Welcome Developer! We are excited to embark on this journey with you to explore Computer Science and learn how to code.

The reason why this Program started was because we saw our little sister struggling to learn how to code because she was unable to attend summer programs this year. We thought, we could just teach her instead - and then we thought: What if we could teach more students around the world how to code?

We launched the STEM League's Developer Program on May 6, 2020 with the goal to craft a virtual Summer Immersive Coding Program for students in 6th - 10th grade. We spent countless hours crafting our own curriculum, recruiting & screening Volunteer Mentors, contacting local organizations for sponsorships & advice, and doing our own research to make this program possible for you.

We hope that you will have an amazing summer experience with us, no matter what background and experiences you may have in coding and STEM. We have college student volunteers who will be guiding you through the course curriculum and assisting you to craft your own projects at the end of the Program.

Learning how to code can be very challenging, especially at this time - but know that you will always have the STEM League community to support you. We encourage you to keep practicing, ask questions (there are no dumb questions!), and learn from your mistakes. Because that is how you will build technical skills & become a strong Developer. You can do it!

THE DEVELOPER PASSPORT

TRACKING YOUR PROGRESS

Throughout the 8 weeks, we will be tracking student's progress through a "Developer Passport." The Developer Passport will provide students an outline of the milestones that they can achieve by earning points for participating in weekly activities, like completing Recap Questions from Lessons, attempting Coding Sessions & Workshops, and attending Career Friday Events.

Developers will be required to earn a certain amount of XPs (points) throughout the whole program to graduate from the Developer Program (described in following pages). There will be plenty of XPs for students to earn each week and we hope that students use the Passport as a guideline for their progress throughout the Program.



WEEKLY OUTLINE

A general structure of what a typical week looks like. All Lessons and Coding Assignments will be released on the day of the Lesson. Workshops and BTWs will be released both on Tuesdays. All student will be **required** to fill out a weekly survey to provide us feedback to improve our Program.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Weekly Newsletter	Data Programming Lesson	Coding Session	Data Programming Lesson	Coding Session	Career Friday or Escape Room	
Passport Updated	Web Development Lesson	Coding Session	Web Development Lesson	Coding Session	Challenge Group Coding Session	
		Workshop	Behind the Workshop		Weekly Survey	

ACTIVITY POINT BREAKDOWN

Student will be earning XPs for each activity they finish/attempt. A goal would be to earn 1,000 XPs each week so they are on track to graduate as a STEM League Developer and earn their certificate.

Activity	Lesson (2x)	Coding Session (2x)	Workshops	Behind the Workshop (BTW)	Escape Rooms	Career Fridays
XP Earned	200 (Recap Qs)	200	-	200	400	200
Time (hours)	1-2	20-30 min	1	1-2	1-2	1
Brief Description	Video released along with Kahoot for Recap Qs	Collaborate with Team and Mentors Guidance during Office Hours	Led by Mentors of activities with CS applications; teach mini-lesson	Extension of Workshop with challenge activity; Mentor can hold office hours	Experimental problem-solving game to end the week with fun.	Industry Panels & other Career Building Advice

LESSONS & CODING SESSIONS

THE TRACKS

Students can choose to participate in one or both tracks offered. Each track will include two weekly 10-20 minute lessons (with Recap Questions) and a supplemental Coding Session Assignment.

Web Development

Want to create your own websites hosted on Github? The Web Development Track will provide a practical approach in learning HTML/CSS and Javascript to make dynamic & reactive webpages. Topics covered include web programming basics, functions and arrays, Bootstrap, and DOM Manipulation.



Data Programming

Challenge yourself through our Data Programming Track where students will be equipped with Python Fundamentals, learn how to utilize libraries for data visualization and image processing, and dive into workshops involving Machine Learning and constructing a Search Engine.

CURRICULUM

Note curriculum schedule of topics covered are **tentative** to change based on weekly student feedback and staff suggestions.

DATA PROGRAMMING

	Monday	Wednesday
Week 1	Intro to Python	Conditionals
Week 2	Lists	More Lists & Sets
Week 3	Loops	More Loops
Week 4	Dictionaries	Functions
Week 5	Testing	File Inputs
Week 6	Pandas	Graphing
Week 7	Data Visualization	Statistics
Week 8	Hackathon	Hackathon

WEB DEVELOPMENT

	Monday	Wednesday
Week 1	Intro to Web Dev	Dive into HTML
Week 2	Layout with CSS	Bootstrap
Week 3	Intro to Javascript	Conditionals & Loops
Week 4	Functions	Arrays
Week 5	Objects	DOM Manipulation
Week 6	Selectors	jQuery
Week 7	Project Proposal	Accessibility Design
Week 8	Hackathon	Hackathon

THE HACKATHON

In Week 7-8, students will be planning and creating their own hackathon project based on the skills they built in the Program. They will be mentored by the STEM League Team who will be providing students suggestions and ideas for their project in various phases of planning including writing a Project Proposal, implementing their project, and presenting their project at the Final Project Showcase, where all students will share their personal projects, at the end of the Program.



CODING IN THE REAL WORLD

WORKSHOPS

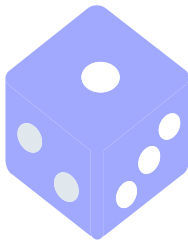
Each Tuesday, a Program Mentor will lead a workshop to teach an interesting topics related to Computer Science. This includes the "GameMaker" series, Tackling COVID-19 Datasets, Designing for Accessibility, Statistical Analysis and more!

BEHIND THE WORKSHOP

Now that you've watched the workshops, it is your time to code up your own project. Behind the Workshop (BTW) are extension activities that challenge students to take what they learn from workshops and build more advanced projects and programs tailored to their own interests. Mentors will assist students through virtual chats and provide suggestions on ideas that students can implement in their projects.

FRIDAYS

On Fridays, we will either have a Career Friday Event or an Escape Room Challenge.



ESCAPE ROOMS

Had enough of coding for the week? Then Escape Rooms are the right thing for you. Students will be able to dive into challenging and exciting problem-solving games that enable them to practice the material they learned during the week. These games are designed by Program Mentors & Instructors and are different themes each week - Stay tuned!

CAREER FRIDAYS

Career Friday Events can range from Career Panels with Industry Engineers to Summer Interns and Mentors sharing their experiences on how they entered the STEM field. Students will gain a better understanding of how to build their technical skills & craft their own portfolios.



OUR MENTORS

WHO MAKE THIS PROGRAM POSSIBLE

Our Mentors are college students who come from all around the US. They all share a passion to support CS education at this difficult time & hope to bridge the gap in STEM. We screen all of our volunteers, train them at Mentor Orientation, and prepare them with materials for each weekly lesson. We are very thankful to our wonderful STEM League Team for making this program possible.



"This program sounds like a really cool opportunity for students to pick up a new skill and explore some new technology during the summer, and I'm all in for that."

"I think it's a great idea, and I think learning about computer science early really helps later on. I look forward to meeting students, helping them get started, and seeing how they grow."

"I would love to mentor students and allow them to grow in a safe environment. Figuring out what you want to do in life is difficult, so being able to help them out and try to find their passions is an exciting first step. There is so much more to tech than just code as well, so showing the versatility of it is just as important!"

"I'm a first-gen college student and understand what it feels like to pave my own way, so I'd like to support other students like myself and inspire them to pursue CS."

"I want to be that pillar for students and help them become successful and make sure they have someone they can reach out to for advice."

"As a TA, I enjoyed and loved helping students especially the ones having difficult situations and need empowerment. I resonated as a student who once needed this in tech. Thus I want to help as much as I can to help and give the support I once needed."

"I absolutely love to help students learn how to code. I have a passion for programming myself, and being able to share and teach that to others is very rewarding and exciting."